THE ARCHITECTURAL RECORD

1935

6

HOSPITAL DESIGN AND EQUIPMENT • HEALTH CENTERS

THE ARCHITECT'S LIBRARY

From The Architectural Work of Sir Banister Fletcher

THE ARCHITECTURAL WORK OF SIR BANISTER FLETCHER. *By W. Hanneford-Smith. B. T. Batsford, Ltd., 15 North Audley Street, London, W. 1. 280 pages. Illustrated. £2 2s. net.*

This monograph is a limited edition of 500 copies, of which 400 only are for sale.

Sir Banister Fletcher is well known as the author of "A History of Architecture on the Comparative Method," and many other books; he was president of the Royal Institute of British Architects, 1929-31. The book gives a short account of his life and activities. Summary of contents: (I) Early Days and Later; (II) Travels; (III) Professional Work—public buildings, residences, commercial buildings, memorials; (IV) Educational work —author, teacher and lecturer; (V) Literary Work; (VI) Notes on the Illustrations; (VII) Sketches at Home and Abroad; (VIII) Designs and Drawings during Studentship Days; (IX) Executed Works; (X) Designs for Proposed Works including several submitted in competitions.

PHILIP WEBB AND HIS WORK. *By W. R. Lethaby, Oxford University Press, 114 Fifth Avenue, New York City. 234 pages. Illustrated. Price $2.50.*

Philip Webb, who studied and worked as an architect from 1849 to 1900, "was a member of the later pre-Raphaelite group (the post-Ruskinite group it might be called)—its architectural member; one of the founders of the firm of Morris & Co., and the intimate friend of William Morris," who figures very prominently in Mr. Lethaby's book. One of the chapters—"Some Architects of the Nineteenth Century and Two Ways of Building" —contains short sketches of sixteen architects including Pugin, Sir Gilbert Scott, and William Butterfield. The volume is illustrated with a portrait of Philip Webb and 24 other plates, including photographs of The Red House, Bexley Heath, his first house, which he built for William Morris, and Clouds, East Knoyle, Wiltshire, probably Webb's best-known house, built for the Hon. Percy Wyndham.

Philip Webb exercised a great influence on domestic architecture both in England and in America, where Richardson had much in common with him as an architect. The following extract from the book is typical of his philosophy as an architect:

"What, then, is an Architect? Simply a *Master-builder*—a chief craftsman. Of old he lived at the building and worked on it with his own hands; generally a mason and sculptor; but though a master-workman, he remained a handicraftsman as well as a designer, and in this lay the secret of his art. Nothing is so fertile in suggestions of new forms as the handling of material. The professional architect sits far from his work, writing and answering letters more than half his time. What does he know of the suggestions offered by the handling of material? The profession of architecture is an absurdity, and the sooner the cobwebs that surround it are swept away the better. Any man whose calling is to design buildings and carry them out is an architect, a master-builder, an artist; and he owes it to Society to do it well and beautifully. The distinction between architect and builder is purely conventional and should disappear. Even the contractor, the purveyor of labour, is not so far removed from actual building work as we architects; he has generally passed through the workshop and made himself a handicraftsman. It would be well if every one who aspired to be an architect did the same.

"Imagine some National School of Architecture to which any one connected with building could have access whether he intended to be an architect, builder, or craftsman. Let the students have every opportunity of seeing work done and of putting their hand to it. Let there be attached workshops where the process of every handicraft could be demonstrated. The school would, of course, be graduated, and it would not be necessary that every one should go through the whole course. The great thing would be that up to this point all should have been trained without distinction, and that the builders should have associated with those who aimed at higher flights. We might hope to raise our ordinary architecture to the level of that of the last century, when without any affectation the sober brickwork and graceful joinery full of pleasant fancy combined to make some of the most loveable homes in England. . . . It would be an excellent thing if young architects would go into a kind of partnership with builders. . . . It is in the workshop that students will get the best part of their training. Let them never lose touch with handicraft."

OUTLINE OF TOWN AND CITY PLANNING. *By Thomas Adams. Foreword by Franklin D. Roosevelt. Russell Sage Foundation, Publication Department, 130 East 22nd Street, New York City. 368 pages. Illustrated.* $3

The author, while continuing a private practice in city planning consultant, is special lecturer in city planning at Massachusetts Institute of Technology, and associate professor in the School of City Planning of Harvard University.

The book is intended to be an introduction to the history of city planning for the general reader as well as the city planner, architect, and student. From a review of early efforts in the planning of cities, the text proceeds with a much fuller treatment of the modern period, including recent developments in the United States. It closes with a chapter on the future of city planning—the art of creating the kind of environment to produce and maintain human values. Appended is a summary of aspects of city planning problems in connection with engineering, landscape architecture, architecture, sociology, economics and finance, and law. A list of a few recent books on the subject is added.

THE WORK OF LE CORBUSIER AND P. JEANNERET FROM 1929 TO 1934. *By Willy Boesiger, Zurich. Introduction by S. Giedion, Zurich. Articles and text by Le Corbusier, Paris. Dr. H. Girsberger, Zurich, Switzerland, publisher. The present volume is the continuation of an earlier series which contained lectures and work from* 1910—1929 *issued by the same publishers.*

Le Corbusier has developed over a period of years a definite and precise program of architecture. The five points of a new architecture which he has formulated at the beginning of his career characterize all of his work and that of his students.

(1) The recapture of the ground area by putting buildings on stilts.
(2) The standardized structural frame which makes possible:
(3) The free plan, with partitioning of rooms independent of each other at different floors.
(4) The free façade, giving 100 per cent daylighting of rooms by windows reaching from floor to ceiling.
(5) The roof garden. The area which the building covers is gained once more as an outdoor deck by the utilization of the flat roof.

Contrary to the practice of the architect who reproduces buildings superficially from styles of the past, Le Corbusier has studied and analyzed present-day living conditions, present-day materials and construction systems. From this research he has evolved the unit type dwelling, the apartment and office building, the city plan and, recently, the farm structures. The tremendous scope of his varied work has been possible only with the generous cooperation of architectural students from all over the world who have sought his guidance in the search for an architecture which is the true expression of ideal living standards executed with the best methods of construction known today. These methods favor prefabrication of building parts in factories where manufacturing can be done accurately by machines, and working conditions are not exposed to the hazards of nature. Mass production thus being made possible, houses and cities can be rebuilt according to new standards to add greatly to the happiness of human beings.

Le Corbusier, in his article on the new city planning, clearly defines the essential requirements by which architecture brings happiness. They are comfort, space, individual freedom, sport, and the harmonious coordination of building parts together with the elements of nature such as earth, trees, water and sky. He respects the natural formation of these elements and by their contrast rather than by similarity with man-made creations arrives at compositions that have a strong and convincing appeal.

The building types shown in the publication, such as residences, office buildings, asylums, theaters, administration buildings, clubs, penthouses and museums, have all been developed with the understanding of building technology and the close cooperation of specialized engineers for structural frame, insulation, natural and artificial lighting, air conditioning, acoustics, pedestrian and automotive circulation.

Le Corbusier points to the fact that the building industry has been neglected in favor of other technical advances made in railroads, ocean liners, automobiles, bridges, power and irrigation dams, airplanes and dirigibles. He hints that the present depression is partly due to the moral and physical dissatisfaction of people resulting from inadequate shelter.

The tremendous vitality which Le Corbusier possesses has enabled him to fight against a majority and realize his theories by continuous practical work. His success is emphasized by examples of the new architecture of his students and followers in almost every country.

Reviewed by ALBERT FREY.

A COUNTRY HOUSE AT POISSY, FRANCE

Photograph by Marius Gravot

LE CORBUSIER AND JEANNERET, ARCHITECTS

THE ARCHITECTURAL RECORD

VOLUME 77 NUMBER 6 JUNE, 1935

Published monthly by F. W. DODGE CORPORATION, 115-119 West 40th Street, New York. Truman S. Morgan, President: Sanford D. Stockton, Jr., Secretary; Howard J. Barringer, Treasurer. Yearly subscription: United States and Possessions, $3.00; Canada and Foreign, $5.00; Single Copy, 50c. Member Audit Bureau of Circulations and Associated Business Papers, Incorporated. **Entered as second class matter May 22, 1902, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Printed in U. S. A.**

INSULATION *must* STAY *on the* JOB

BE SURE

You Specify the Kind that Will

ONCE applied, insulation is usually hidden away from sight. Will it stay on the job—year after year? Will it retain its original form unaltered? Will it continue to give the protection expected of it? These are important questions that must be answered, if the owner is to get full value.

BALSAM-WOOL Blanket Insulation retains its high efficiency *permanently*. It does not settle, because it is firmly fastened in place. It will not change its form. Because it is flexible, it tucks into every little space, leaving no crack or crevice for heat or cold to get through. With BALSAM-WOOL, you can maintain continuity of effective insulation, because BALSAM-WOOL covers all of the area to be insulated with the same thickness of insulation.

BALSAM-WOOL is waterproof, windproof, fire-resisting and verminproof. Three thicknesses—½-inch, 1-inch and Wall-Thick enable you to choose the *right* thickness for every requirement. Let us tell you more about BALSAM-WOOL. Complete information is yours for the asking.

BALSAM-WOOL

WOOD CONVERSION COMPANY
ST. PAUL • MINNESOTA

WEYERHAEUSER FOREST PRODUCTS

Made by the Makers of **NU-WOOD**

IN THIS ISSUE

Photograph by Samuel H. Gottscho

New York Hospital-Cornell Medical College, New York City.
Coolidge, Shepley, Bulfinch and Abbott, Architects

MEDICAL CENTERS . . . . Recent hospital planning, as demonstrated by the text and illustrations in this issue, shows a trend toward unification of medical services. A study prepared by the office of John Russell Pope, architect, in collaboration with Dr. S. S. Goldwater, hospital consultant, lists specific requirements for medical centers in communities of 25,000 and 200,000 population.

HEALTH CENTERS . . . . In line with efforts of the medical profession to prevent as well as to remedy ill health is the development of this new building type. Several examples—one in England, the others in California—are illustrated.

PHOTOGRAPH BY SIGURD FISCHER . . . . . JAMES GAMBLE ROGERS, ARCHITECT

THE COLUMBIA-PRESBYTERIAN MEDICAL CENTER IN NEW YORK CITY

THE
ARCHITECTURAL RECORD

WHAT IS THE MEDICAL CENTER?

By T. J. YOUNG of the office of John Russell Pope, Architect

The Philadelphia Hospital, erected in 1752, had a simple arrangement of beds for the segregation and treatment of the sick, but little else to suggest modern hospital. Anaesthesia, the X-ray, asepsis and the many laboratory procedures necessary to the diagnosis and treatment of diseases have given us a building far removed from that simple beginning.

The functions of a modern hospital may be divided into four categories: (1) treatment of the sick or the *medical* function; (2) training of medical students and nurses, or the *teaching* function; (3) investigation, or the *research* function; (4) constructive health building, or the *social* function. In the last quarter century there has been such a rapid expansion of all these functions that it has become increasingly difficult for any single hospital in a community to accept the fourfold obligations.

Out of this situation has developed the medical center, which is simply a logical economic coordination of hospital and health facilities. Physically, it is a hospital or group of hospitals and their dependencies, frequently linked with the medical faculty of a university, and arranged, if properly planned, for orderly expansion of any or all of the hospital functions.

The medical center may serve the crowded population of our largest cities, as do the two principal examples in New York City, or it may serve smaller cities, such does the one at Syracuse. In the future numerous examples of the medical center idea will no doubt be planned to serve regionally the more thickly populated rural districts.

It has been frequently found advisable to decentralize some of the hospital functions. At Syracuse, for example, the ultimate development will include a psychiatric hospital, a city hospital, a university hospital, a medical school, a nurses' home, laboratories and dispensaries.

The architect has numerous problems in this diversification, but he may escape many pitfalls by a careful preliminary examination of the topography, neighborhood, prevailing winds and other matters bearing on the placing and orientation of the proposed and future buildings. He will also need to study the relationship of the buildings in order to secure maximum efficiency. The relation of the buildings to traffic arteries is likewise important because of the possibility of noise. An agreeable prospect from the patients' buildings is desirable for obvious reasons. In districts in or near industrial developments consideration must be given to the prevailing winds which may carry impurities, dust or smoke and which can be a source of much trouble. If the trustees or directors of the medical center are far-sighted they will protect the properties from too close encroachment by industrial buildings. Most important, they will secure plenty of ground for expansion.

One of the chief problems for the designer is securing an aspect of homogeneity in such varying structural types as a tuberculosis hospital and a nurses' home.

The patient frequently gets his first impression from the hospital entrance, and such impressions may influence subsequent experiences inside the hospital. Impressive dignity is not necessary and may even be harmful. Should the medical group be erected in a residential zone, it may be advantageous to carry out the exterior architecture in a domestic spirit. The duty of the designer is to eliminate, wherever possible, harshness of color, sound or form, and to replace gloom with an atmosphere of cheerful efficiency.

MEDICAL CENTERS—SMALL AND LARGE

By GEORGE S. HOLDERNESS of the office of John Russell Pope, Architect

The complete medical center may be considered as an institution containing the following divisions: General Hospital, Maternity, Pediatrics, Orthopedic, Crippled and Ruptured, Isolation, Tuberculosis, Cancer, Convalescent, Neuro-psychopathic, Urology, Dental, Eye-Ear-Nose-and-Throat, X-ray, Clinic, Welfare (Social Service), Laboratories, Medical School, School of Nursing.

Every division in this grouping represents an activity to which a separate and complete institution could be and often is devoted. Although some of these divisions are found in the standard general hospital there is no inherent rivalry expressed in the articulation of the properly balanced medical center. Though distinct in their respective phases of the work, they are bound by a common purpose—the good health of the public.

It should be borne in mind that a medical center is not necessarily an administrational amalgamation. In the case of a grouping of several institutions, of which each has its own plant, it is often found that they are held and administered separately but with a working agreement for reciprocal use of facilities. Among other reasons for this is the fact that the medical center sometimes consists of an assortment of state, county, municipal and private institutions.

In any community, whether it be a metropolis or a small city of 25,000, the medical center generally is developed around one or more existing institutions. In many cases the location of these nuclei determines the site of the proposed group. In other instances the entire medical center is housed in a plant which is entirely new from stem to stern.

FOR THE COMMUNITY OF 25,000

The community of 25,000 intending to develop a medical center has the problem of deciding just which of the hospital divisions should be provided. It is safe to say that there is a need, to a greater or lesser degree, of all of these divisions. In formulating a building program the extent of this necessity is the crucial point; the paramount question is whether this or that type of case will appear for hospitalization in sufficient numbers to justify the community in providing a distinct service for it.

GENERAL HOSPITAL

The nucleus of any medical center is the general hospital. In a community of 25,000 it assumes increased importance because of the likelihood that it will include many of the divisions which in a larger community would be considered as separate entities. At the other extreme of the range of probable inclusion is the medical school, a no less desirable feature but barred by circumstances in nearly all instances. The average community of 25,000 does not possess a medical school, and even the Chamber of Commerce, where properly advised, rarely entertains any illusions about creating one.

The maternity, pediatric, convalescent, urology, orthopedic, crippled and ruptured, cancer, and eye-ear-nose-and-throat divisions are essential, but in this size community the demand is generally insufficient to justify their establishment as so many separate hospitals. Their rightful place seems to be in the general hospital, where flexible planning and organization can be made not only to satisfy the patients' every need but to result in administrational economies as well. The same is true of the neuro-psychopathic division, although in a city of the size considered the volume of such work is generally small and the patients are in most cases merely held under observation pending discharge or commitment to special institutions for treatment.

Because of their close relationship with the various parts of the general hospital, the X-ray and laboratory divisions likewise should appropriately be located here. It appears likely that practically all dental work required of a medical center in a small city can be handled in the out-patients' division, or clinic.

ISOLATION HOSPITAL

For communicable diseases the usual practice favors strict segregation in a detached and fairly removed building, although in some cases circumstances compel the use of merely a separate and distinct wing for this purpose. In certain communities the presence of a contagious hospital in any of the well populated neighborhoods is looked upon with disfavor. It can be said definitely, however, that if communicable diseases are to be treated in the medical center the isolation hospital is a necessary division. For the treatment of tuberculosis there is little likelihood that in the average community of 25,000 a separate hospital could be justified. Because of the lingering nature of their affliction and the specialized character of treatment required, tubercular patients customarily are cared for in state or other institutions planned and equipped particularly for this work. Such institutions are made practical by the wide area from which they draw patients; in the small community the tubercular patient can be cared for in a special section of either the general or the isolation hospital until his future hospitalization is agreed upon.

CLINIC

For economy in construction the small community generally will find it practical and desirable to house its clinic as an integral part of the general hospital

building. The clinic, however, is to be thought of as a separate unit, an organization that could function even though there were no general hospital. It is properly regarded as one of the most important elements of a medical center and a prime contributor to the sustained health of a community. Here we find a broad division into medicine and surgery and customarily the following classification of treatment for out-patients—dentistry, eye-ear-nose-and-throat, obstetrics, pediatrics, neurology, dermatology, genito-urinary, gynecology, orthopedics, gastrology and dispensary. In the small community, where a distinct tuberculosis hospital is impractical, the provision of out-patient treatment for ambulatory victims of this malady is recommended by many authorities.

In modern times it has become realized that a considerable part of all illness is the result of social causes, and the conscientious hospital now feels that its social service or welfare department is one of its indispensable adjuncts. The home, work, recreational and emotional life not only of both bed- and out-patients but of the community at large are the fields in which social service is active, and this department is properly located within easy access to the clinic and the public spaces of the general hospital.

NURSES' QUARTERS

The provision of living quarters for nurses is generally regarded as part of any general hospital project. Preferably such accommodations take the form of a separate building where relaxation and domestic life are furthered by remoteness from hospital atmosphere. The nurses' home should include not only sleeping quarters, in a proper balance of single and double rooms, and adequate bath and toilet facilities, but also rooms for recreation and social intercourse. There is at present among the best hospital minds a divergence of opinion as to the usefulness of the training school for nurses; in cases where the school is favored it is customarily found in the nurses' home and includes class and assembly rooms, laboratories, demonstration rooms, library and offices.

OTHER REQUIREMENTS

While a separate building for servants' quarters is not at all rare in connection with hospitals, it is hardly probable that an urgent need would be felt for such accommodations in a medical center for a community of 25,000. Except where this population is unusually spread out the hospital generally has no acute problem in securing servants. This observation, of course, is based upon a community whose population is of average cross-section. In a community which consists largely of restricted residential developments it is not unlikely that a hospital would be forced to draw its servants from neighboring towns, in which case the medical center would find it distinctly advantageous to provide quarters.

In a small group, such as the medical center under consideration, it is generally found economical in construction and operation to locate the power plant in the principal hospital building or in a wing. This is true also of the laundry and garage.

CONCLUSIONS

Reviewing the requirements as already set forth, it appears that a reasonably compact and yet efficient medical center for a community of 25,000 would consist of (a) general hospital, including also the special divisions of maternity, pediatrics, convalescence, urology, orthopedics, eye-ear-nose-and-throat, neuro-psychopathics, X-ray, laboratories, and social service, (b) isolation hospital for communicable diseases, including tuberculosis, if not cared for in the general hospital, (c) clinic (incorporated in the general hospital building), and (d) nurses' home, including training school where desired.

This program would involve a group of three buildings in a scheme which cannot be charged with being excessively ambitious for a community of 25,000. In view of the wide variation of conditions and customs among communities of this size no attempt has been made to predetermine the amount of space and facilities to be assigned to the several divisions of this typical medical center; in arriving at such information every individual community is a separate problem to which the answer can be obtained only after careful analysis of its needs and the wishes of those sponsoring the movement.

It must be remembered also that this survey of probable requirements is based on the premise that the hypothetical community under consideration has no special hospitals for any of the divisions included. In exceptional localities, for example, a maternity or convalescent or tuberculosis hospital might already be in existence and contemplated as an important element in the proposed medical center, in which case the program as here outlined would be modified accordingly; but such special institutions rarely exist in communities of this size.

FOR THE COMMUNITY OF SEVERAL HUNDRED THOUSAND

For more populous localities, and yet not those which fall in or border upon the "metropolitan" class, let us consider the community of several hundred thousand, which might be a single city of that size or even a county or other district consolidated in the project of a medical center. How would the medical center in such a community differ in make-up from that in the smaller one?

The principal difference results from the greater need of hospitalization in the special divisions, which means not only a probable necessity of providing separate hospitals for certain divisions but also an increased likelihood that such special hospitals already exist in the community and are potential parts of a medical center. If a completely new plant is contemplated it is fitting, then, to provide separate wings for these special divisions instead of merely assigning them to space in the general hospital. Thus each special division enjoys the benefits of segregation without losing the obvious advantages of physical connection with the general hospital and other phases of the medical center.

SPECIAL DIVISIONS

It is impossible to catalogue the exact special divisions for which in a community of this size separate wings of the medical center should be set aside. In certain communities, for example, it is conceivable that there are well established special hospitals which are located unfavorably for becoming a unit in the proposed medical center and which for valid reasons object to moving bodily into new quarters. A possible effect of this situation is a notable curtailment of the medical center's activities in these particular fields; in such a case the building committee often contents itself with planning a future wing or wings for their accommodation.

MEDICAL SCHOOL

Where the community is the seat of a medical school, which is more likely than in the case of the smaller community, this institution is usually looked upon by the sponsors of a proposed medical center as a very desirable element in the scheme of an enlarged public service; in fact, the benefits to the medical school are so pronounced that its own guiding spirits are generally found among the prime movers behind such a development. The planning of a medical school is a study in itself. Suffice it here to say that while the school's separate identity and prestige are not to be clouded, its location nearby or with the main hospital buildings is to be recommended.

SERVICE BUILDINGS

The provision of servants' quarters depends on local conditions. Where available living accommodations are too far removed from the site of the medical center it is often found desirable and even urgent to care for the servants on the property. In such cases the customary practice is to segregate the men in one detached building and the women in another, although for the sake of economical construction a single building divided into two parts is sometimes adopted. The matter of the separate power house also is largely controlled by factors which cannot be anticipated when discussing communities in general but must be made the subject of careful analysis for each individual case. Whether technical and financial considerations dictate that the plant shall be isolated or incorporated in one of the hospital buildings, it is of great importance that the chimney be sufficiently high or remote to cause no annoyance to patients and personnel.

CONCLUSIONS

In other fundamental respects the medical center for a community of several hundred thousands is likely to bear a strong resemblance to its little brother of the less populous community. Although more imposing in size and with its functions more highly developed it is essentially the same mechanism. The general hospital and the clinic are here also the chief instruments of public service, with the noteworthy difference that certain special divisions are of a magnitude sufficient to warrant their segregation in distinct wings or even in separate buildings, while the nurses' home and the isolation hospital assume an increased importance in keeping with the remainder of the group.

Summing up, the framework of a medical center in a community of this size would become an assembly of (a) general hospital, including also those special divisions for which local conditions do not justify separate establishments, (b) special hospitals, as warranted by local circumstances, installed in separate wings of the main hospital or in detached buildings, (c) clinic and dispensary, (d) isolation hospital, (e) medical school, where possible, (f) nurses' home, including training school if in line with the policy of the administration, (g) servants' quarters, where nature of community demands, and (h) power house.

THE COMPACT MEDICAL BUILDING

No discussion of medical centers would be complete without reference to the compact "medical building," a form of concentrated service which in recent years has found much favor in town and city alike. Starting as the "doctors' building," an office structure occupied exclusively or almost so by members of the profession, it has in many cities become expanded to a point of considerable clinical significance.

In the medical building we find the offices of doctors of all branches of medicine and dentistry, complete with laboratories and rooms for consultation, treatment, rest, and minor operations. Here also are roentgenologists, chemists and others practicing in fields allied to the medical and dental. In some instances the medical building goes so far as to include a full-fledged hospital with accommodation for bed patients, major operating rooms and other standard features.

ADVANTAGES

As compared with the miscellaneous locations where doctors' offices are generally found the medical building has distinct advantages. It offers planning and mechanical arrangements designed particularly for this class of occupancy. It provides an intimate and profitable relationship among those who are working in kindred fields, and for the public it facilitates the business of "going to the doctor." For the purposes which it serves, the advantages of a location in the heart of a city are manifest.

LIMITATIONS

Although it embraces a range of services the medical building is primarily a "center of doctors" and is not to be thought of as a competitor of the medical center where such an institution exists. While it is true that in some localities the medical building does yeoman service as a substitute for a medical center it is essentially a coordination and refinement of the private practice of doctors in a community. Except in the rare cases where actual hospitalization is provided it cannot be regarded as an encroachment on the true territory of the complete medical center.

HOSPITALS AND MEDICAL CENTERS

MEADOWBROOK HOSPITAL AT HEMPSTEAD, LONG ISLAND, NEW YORK
OFFICE OF JOHN RUSSELL POPE AND WILLIAM F. McCULLOCH, ASSOCIATED ARCHITECTS

Photograph by Drix Duryea, Inc.

GENERAL VIEW OF PATIENTS' BUILDING

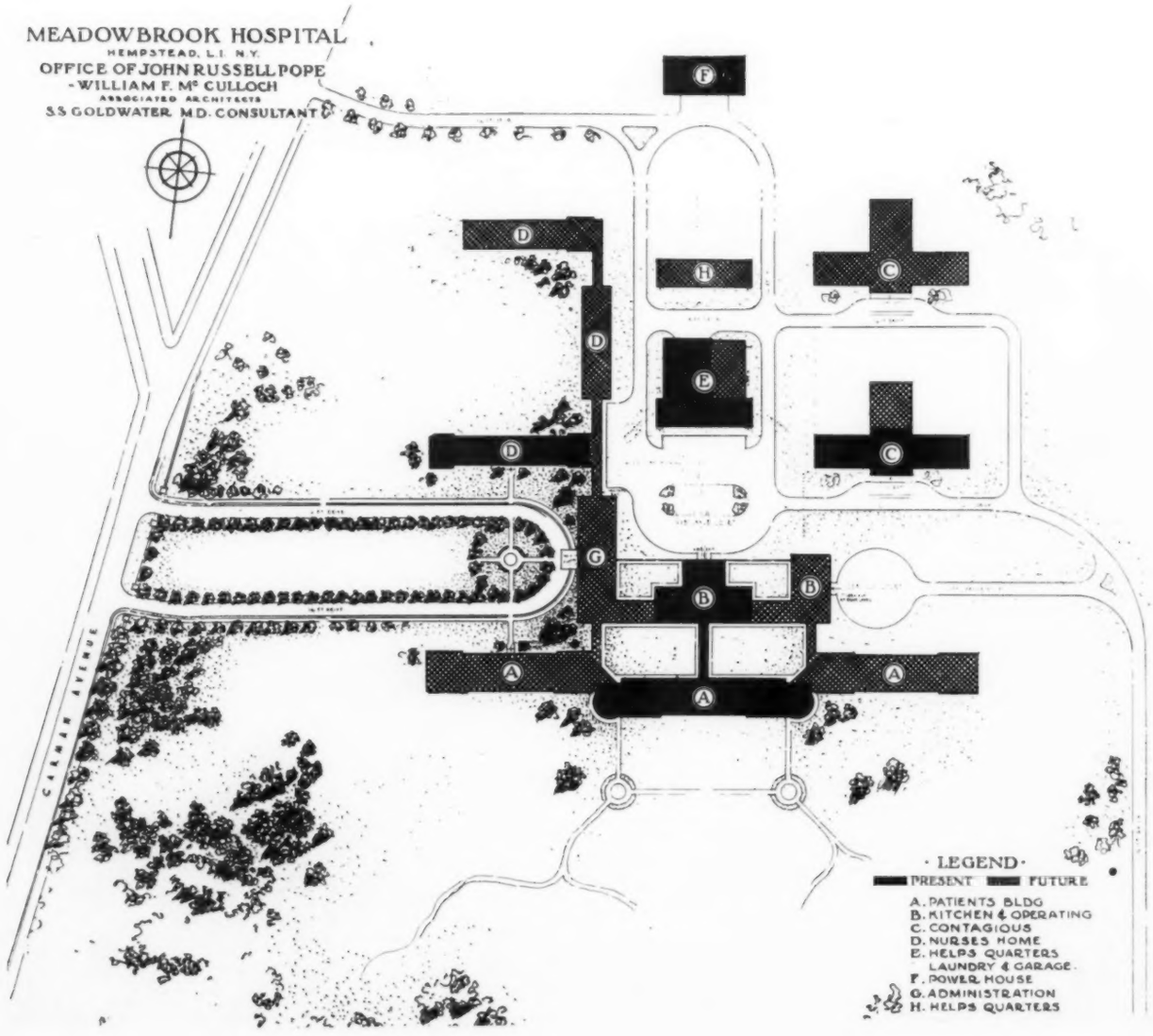
INTERIOR VIEW OF TYPICAL SOLARIUM

Photographs by Drix Duryea, Inc.

MEADOWBROOK HOSPITAL AT HEMPSTEAD, LONG ISLAND, NEW YORK
OFFICE OF JOHN RUSSELL POPE AND WILLIAM F. McCULLOCH, ASSOCIATED ARCHITECTS
S. S. GOLDWATER, M.D., CONSULTANT

CANTILEVERED BALCONIES FOR PATIENTS

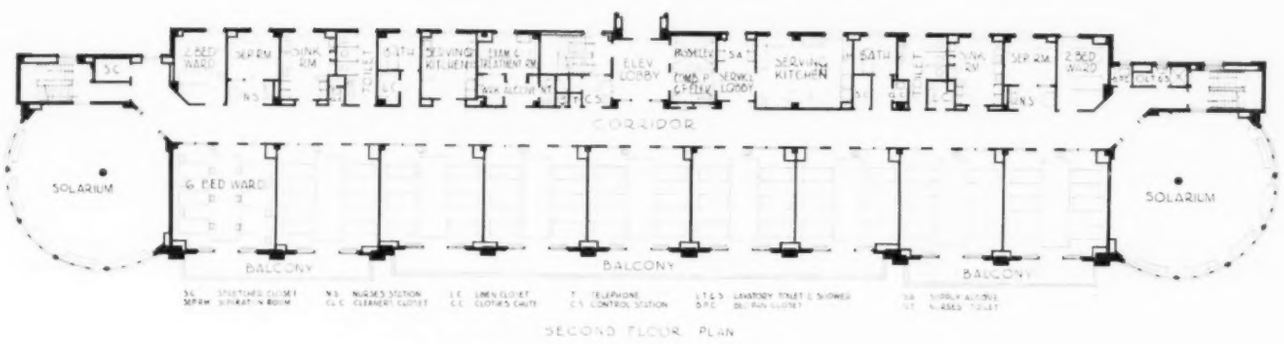
PERSPECTIVE VIEW OF FUTURE ENTRANCE COURT



MEADOWBROOK HOSPITAL AT HEMPSTEAD, LONG ISLAND, NEW YORK

OFFICE OF JOHN RUSSELL POPE AND WILLIAM F. McCULLOCH, ASSOCIATED ARCHITECTS

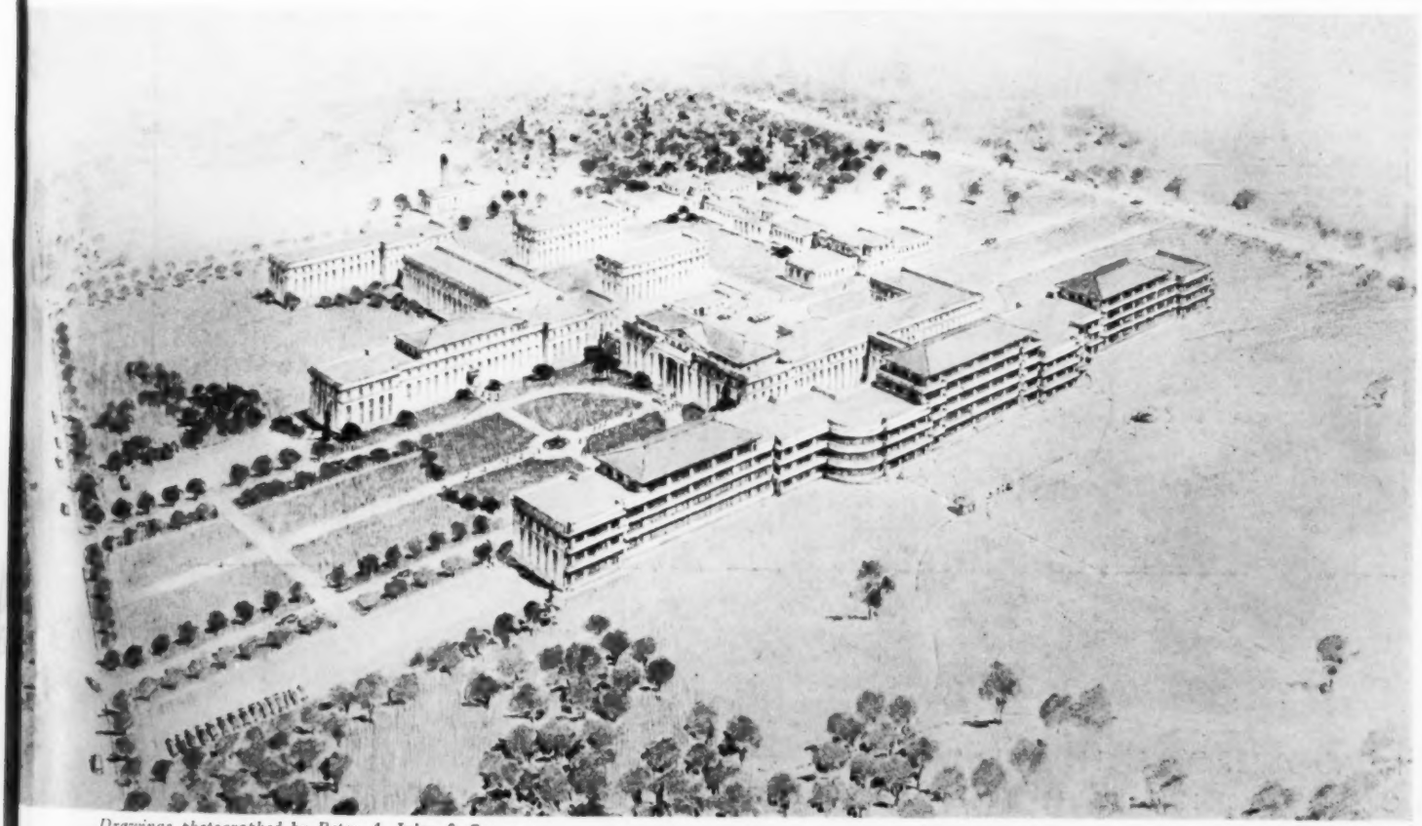
TYPICAL WARD FLOOR IN PATIENTS' BUILDING



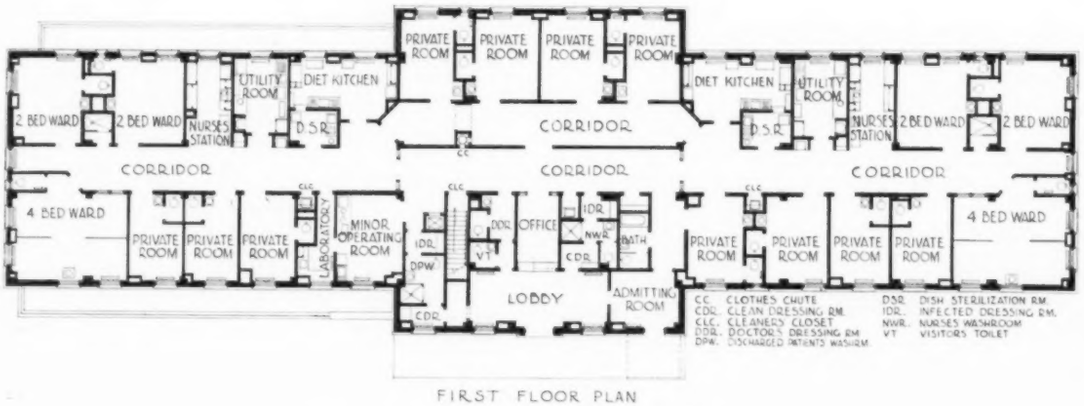
SECOND FLOOR PLAN

Main Patients' Building (including kitchen and operating departments): 173 beds. Cost: $759,874 or 66 cents a cubic foot . . . Nurses' Home: 107 beds. Cost: $203,209 or 68 cents a cubic foot . . . Other Patients' Buildings: 27 beds. Cost: $121,571 or 70 cents a cubic foot . . . Cost of entire plant: $1,403,207 or 67 cents a cubic foot.

BIRD'S-EYE PERSPECTIVE OF COMPLETE HOSPITAL GROUP

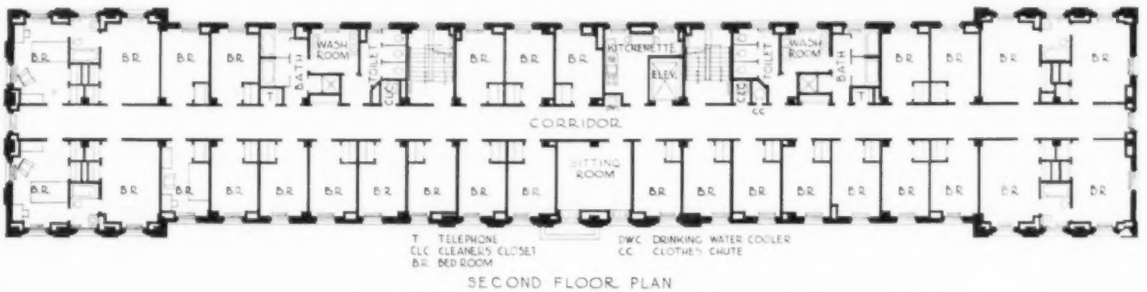


Drawings photographed by Peter A. Juley & Son



FIRST FLOOR PLAN

PATIENTS' FLOOR IN CONTAGIOUS BUILDING



SECOND FLOOR PLAN

A TYPICAL BEDROOM FLOOR IN NURSES' HOME

SCALE OF PLANS:
1/32" EQUALS 1'0"

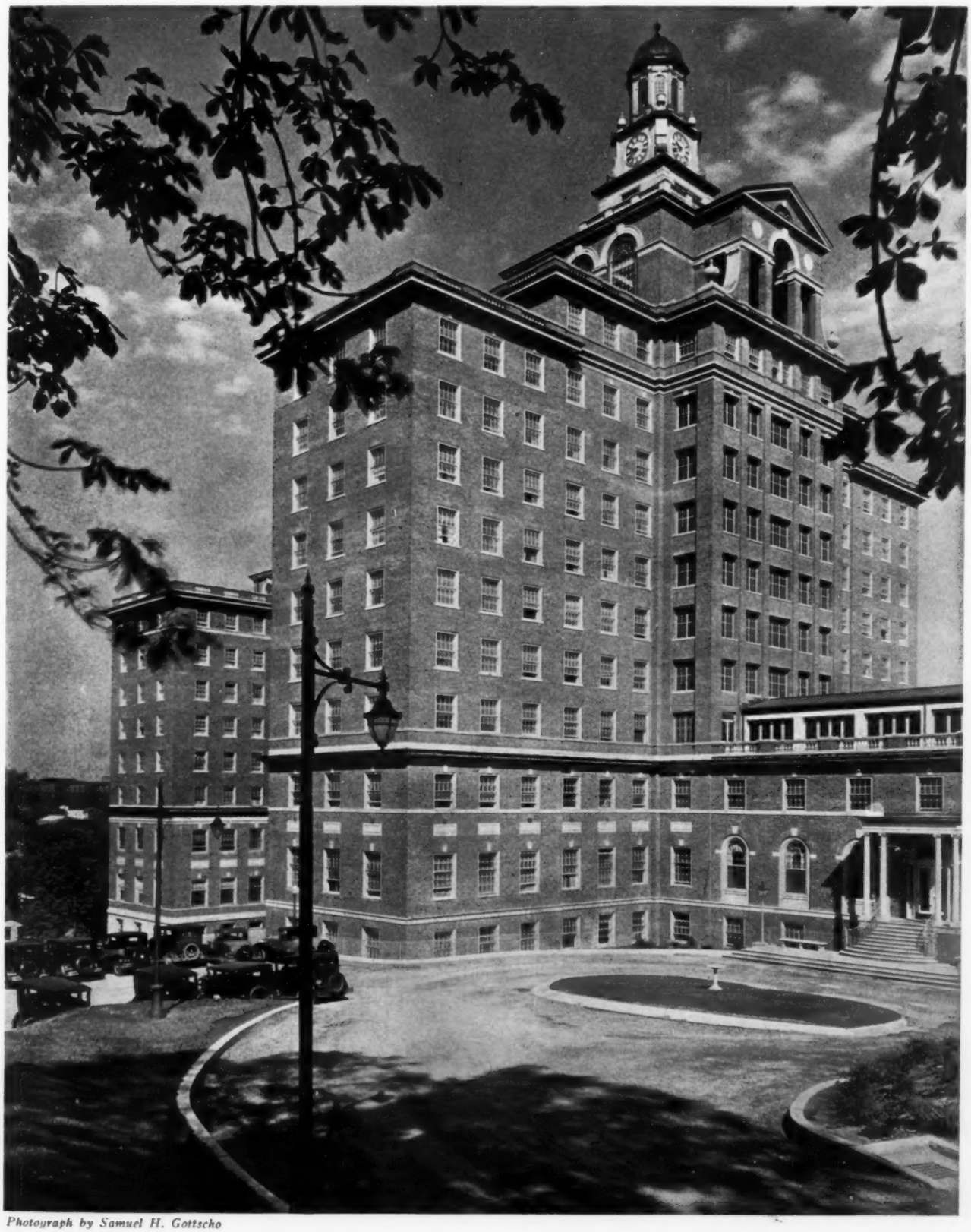
FIRST FLOOR PLAN

X-RAY AND LABORATORY FLOOR
IN KITCHEN AND OPERATING BUILDING

MEADOWBROOK HOSPITAL AT HEMPSTEAD, LONG ISLAND, NEW YORK
OFFICE OF JOHN RUSSELL POPE AND WILLIAM F. McCULLOCH, ASSOCIATED ARCHITECTS

SYRACUSE MEMORIAL HOSPITAL AT SYRACUSE, NEW YORK

OFFICE OF JOHN RUSSELL POPE AND DWIGHT JAMES BAUM, ASSOCIATED ARCHITECTS



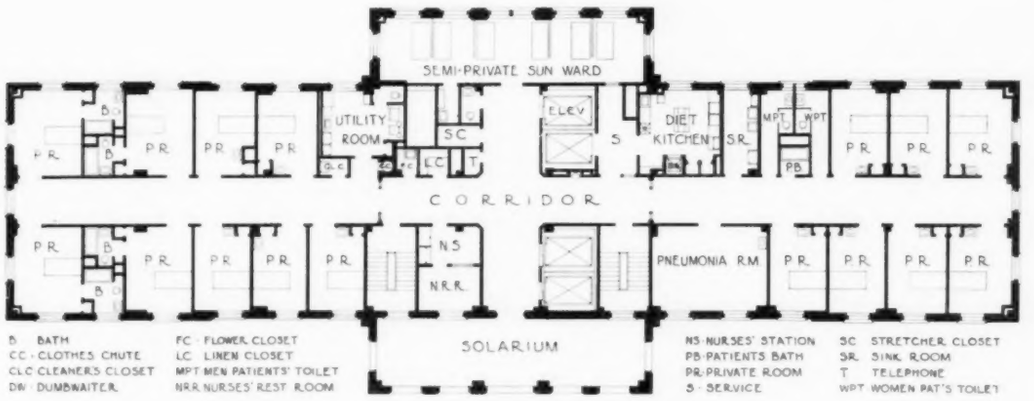
Photograph by Samuel H. Gottscho

Photograph by Samuel H. Gottscho

DETAIL OF TOWER LOGGIA

SYRACUSE MEMORIAL HOSPITAL AT SYRACUSE, NEW YORK

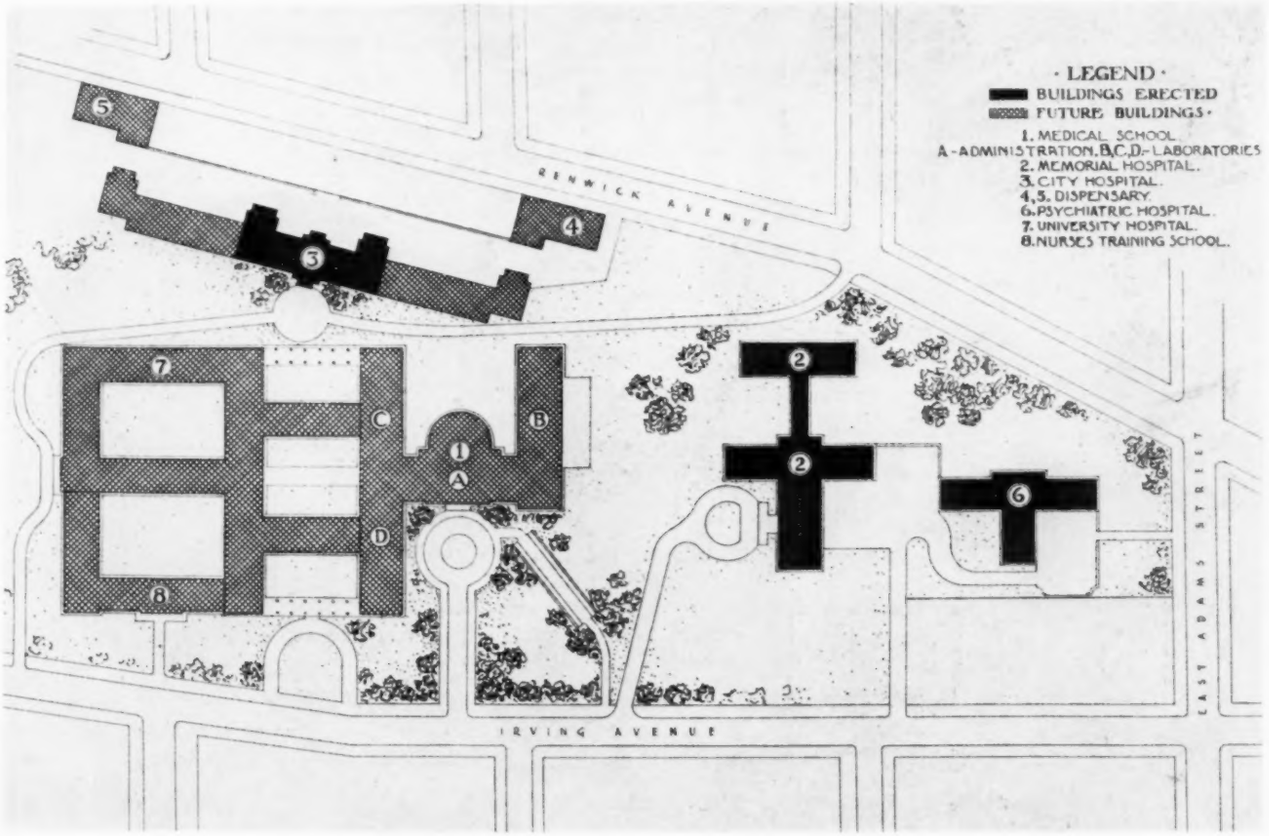
OFFICE OF JOHN RUSSELL POPE AND DWIGHT JAMES BAUM, ASSOCIATED ARCHITECTS



SIXTH FLOOR PLAN

PRIVATE ROOMS FLOOR IN PATIENTS' BUILDING

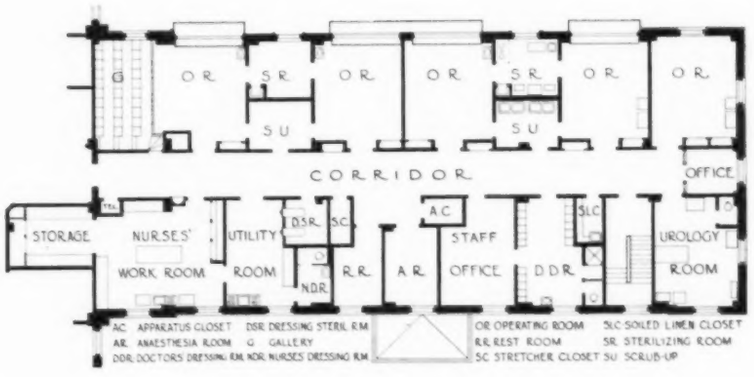
Main Patients' Building (including administration space): 283 beds. Cost: $1,458,220 or 82 cents a cubic foot. . . . Nurses' Home: 145 beds. Cost: $415,274 or 74 cents a cubic foot. Cost of entire plant: $1,873,494 or 80 cents a cubic foot.



PLOT PLAN

SYRACUSE MEMORIAL HOSPITAL AT SYRACUSE, NEW YORK

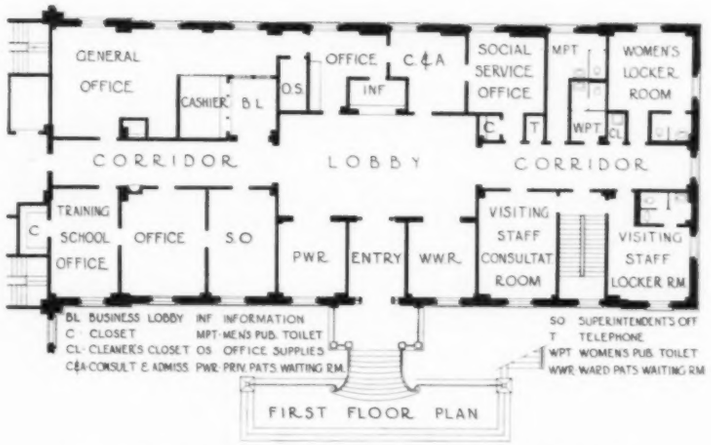
OFFICE OF JOHN RUSSELL POPE AND DWIGHT JAMES BAUM, ASSOCIATED ARCHITECTS



SECOND FLOOR PLAN

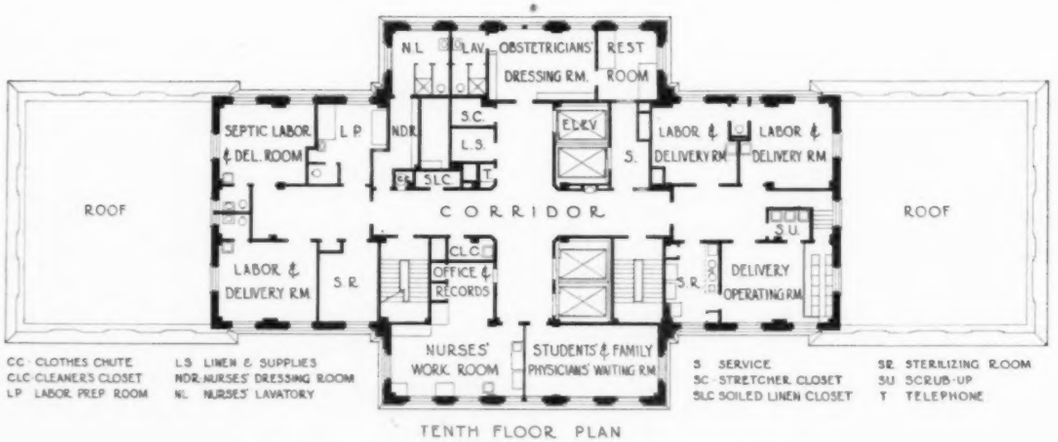
OPERATING DEPARTMENT IN ADMINISTRATION BUILDING

SCALE OF PLANS:
1/32" EQUALS 1'0"



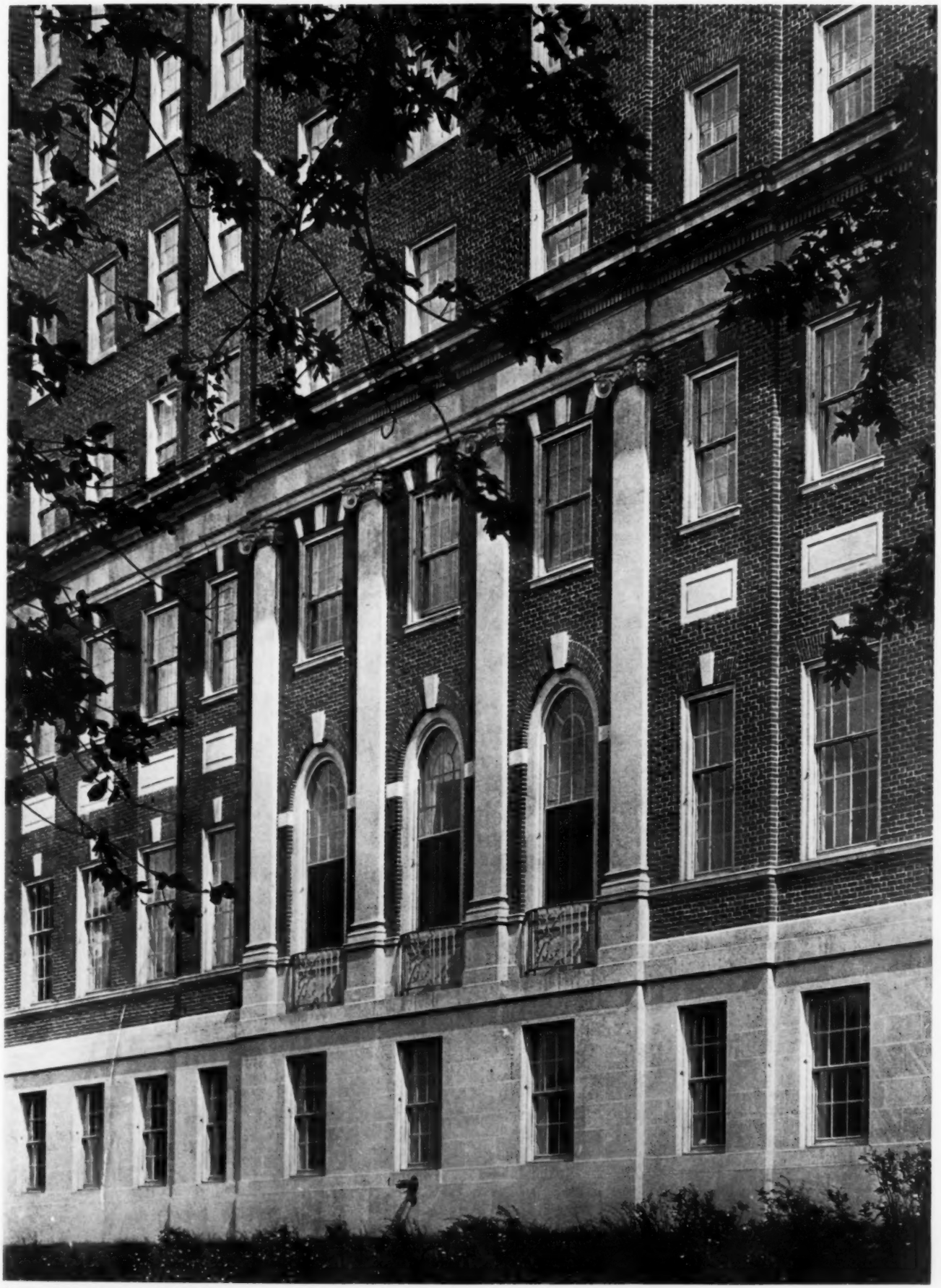
FIRST FLOOR PLAN

MAIN ENTRANCE FLOOR IN ADMINISTRATION BUILDING



TENTH FLOOR PLAN

OBSTETRICAL DEPARTMENT IN PATIENTS' BUILDING



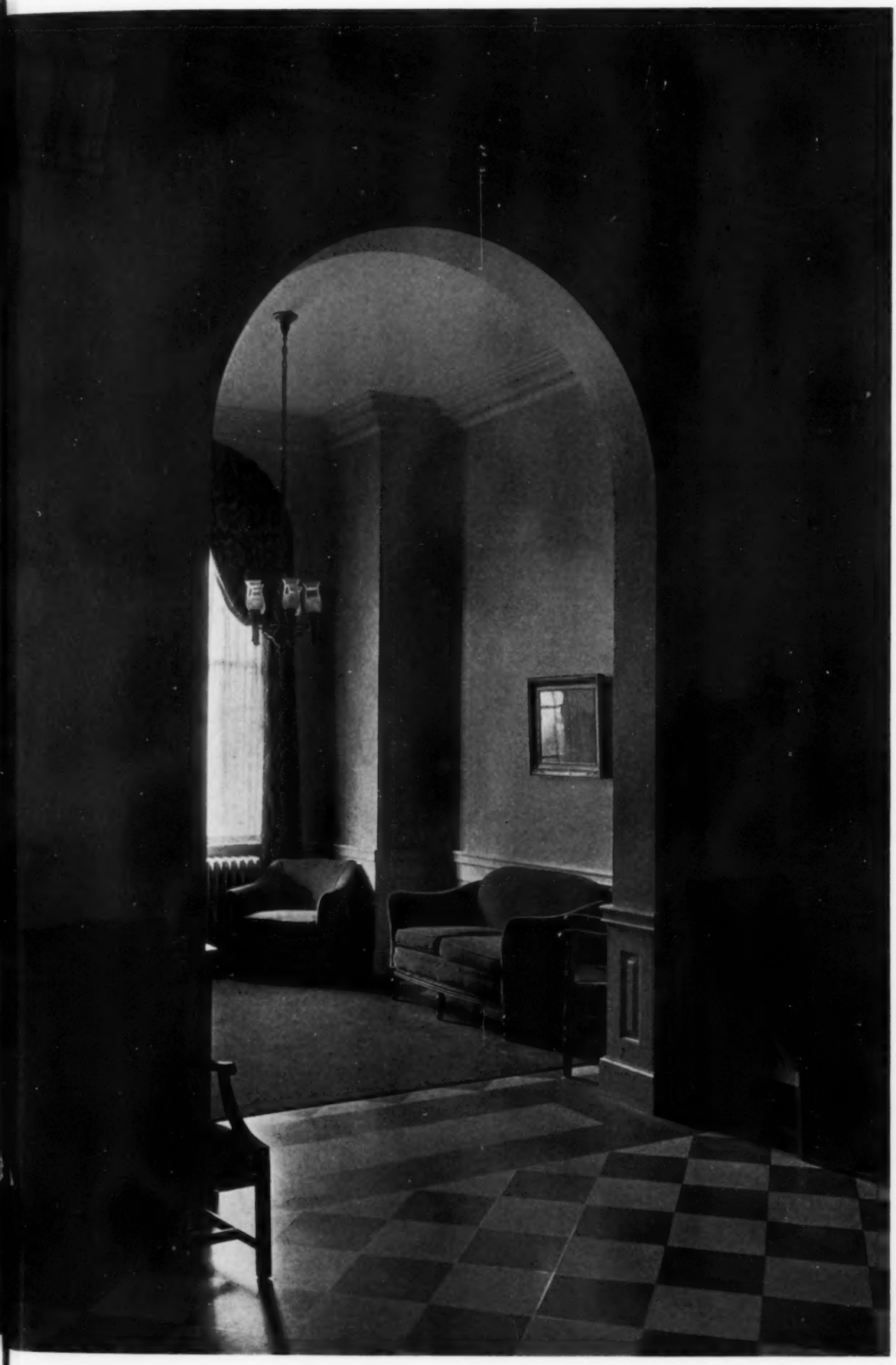
Photograph by Samuel H. Gottscho

DETAIL OF FACADE OF NURSES' WING

DETAIL OF MAIN ENTRANCE LOBBY

Photographs by Samuel H. Gottscho

OFFICE OF JOHN RUSSELL POPE AND
DWIGHT JAMES BAUM, ASSOCIATED ARCHITECTS



DETAIL OF WEST
RECEPTION ROOM

SYRACUSE MEMORIAL HOSPITAL AT SYRACUSE, NEW YORK

OFFICE OF JOHN RUSSELL POPE AND DWIGHT JAMES BAUM, ASSOCIATED ARCHITECTS

OPERATING ROOM

Photographs by Samuel H. Gottscho

SPECIAL DIET KITCHEN

UTILITY ROOM

INFANTS' WARD

DELIVERY ROOM

Photographs by Samuel H. Gottscho

BABIES' SOLARIUM

SYRACUSE MEMORIAL HOSPITAL AT SYRACUSE, NEW YORK

OFFICE OF JOHN RUSSELL POPE AND DWIGHT JAMES BAUM, ASSOCIATED ARCHITECTS

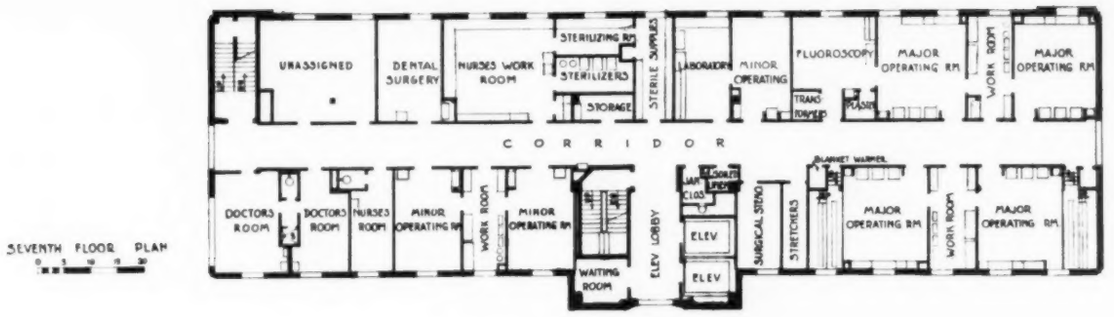
ROBERT PACKER HOSPITAL AT SAYRE, PENNSYLVANIA

ELLERBE & CO., ARCHITECTS

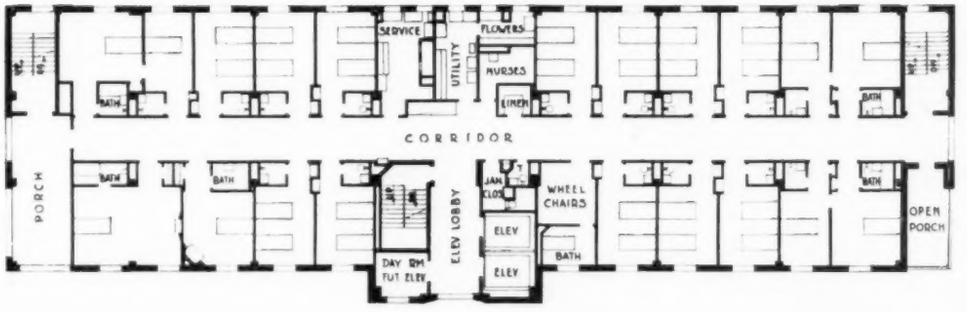
This unit, replacing one destroyed by fire, contains 200 beds of a 300-bed institution. The first, second and third floors are wards; the fourth, fifth and sixth floors private and semi-private rooms. The administrative and out-patient sections are in the Clinic Building.

Features: Concrete frame, brick walls; mastic tile floors in wards; linotile floors in private rooms; rubber floors in corridors, service rooms and operating rooms; glazed brick wainscots in corridors, tile wainscots in baths and terrazzo wainscots in toilets, terra cotta wainscots in operating rooms; acoustical ceilings in corridors and service rooms; air conditioning includes cooling in operating rooms and corner rooms for private patients; two-channel radio at each bed; direct control on radiators; central food service and central dishwashing with tray conveyor and dumb-waiter; bedpan flushing facilities for all toilets.

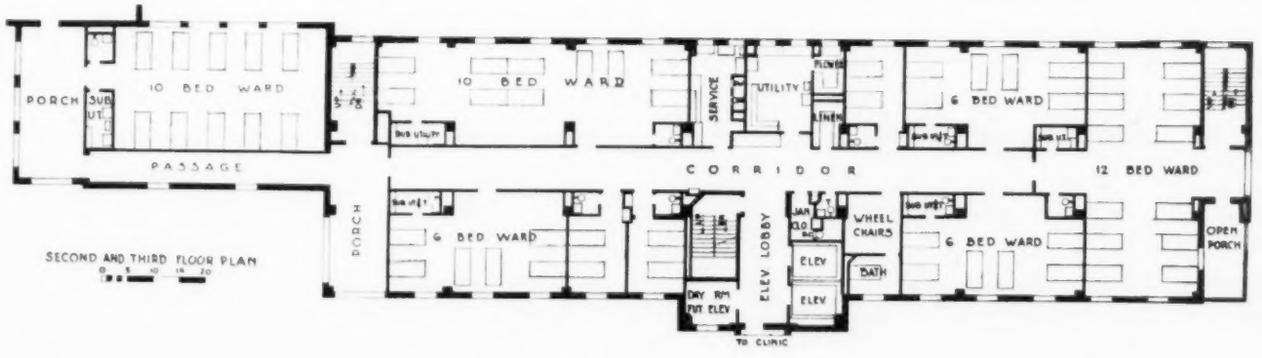
Cost, including elevators, kitchen equipment, refrigerators, sterilizers, light fixtures, air conditioning and architects' fees, but not including boiler plant (in separate building): $500,000, or 58¢ a cubic foot.



SEVENTH FLOOR PLAN



SIXTH FLOOR PLAN

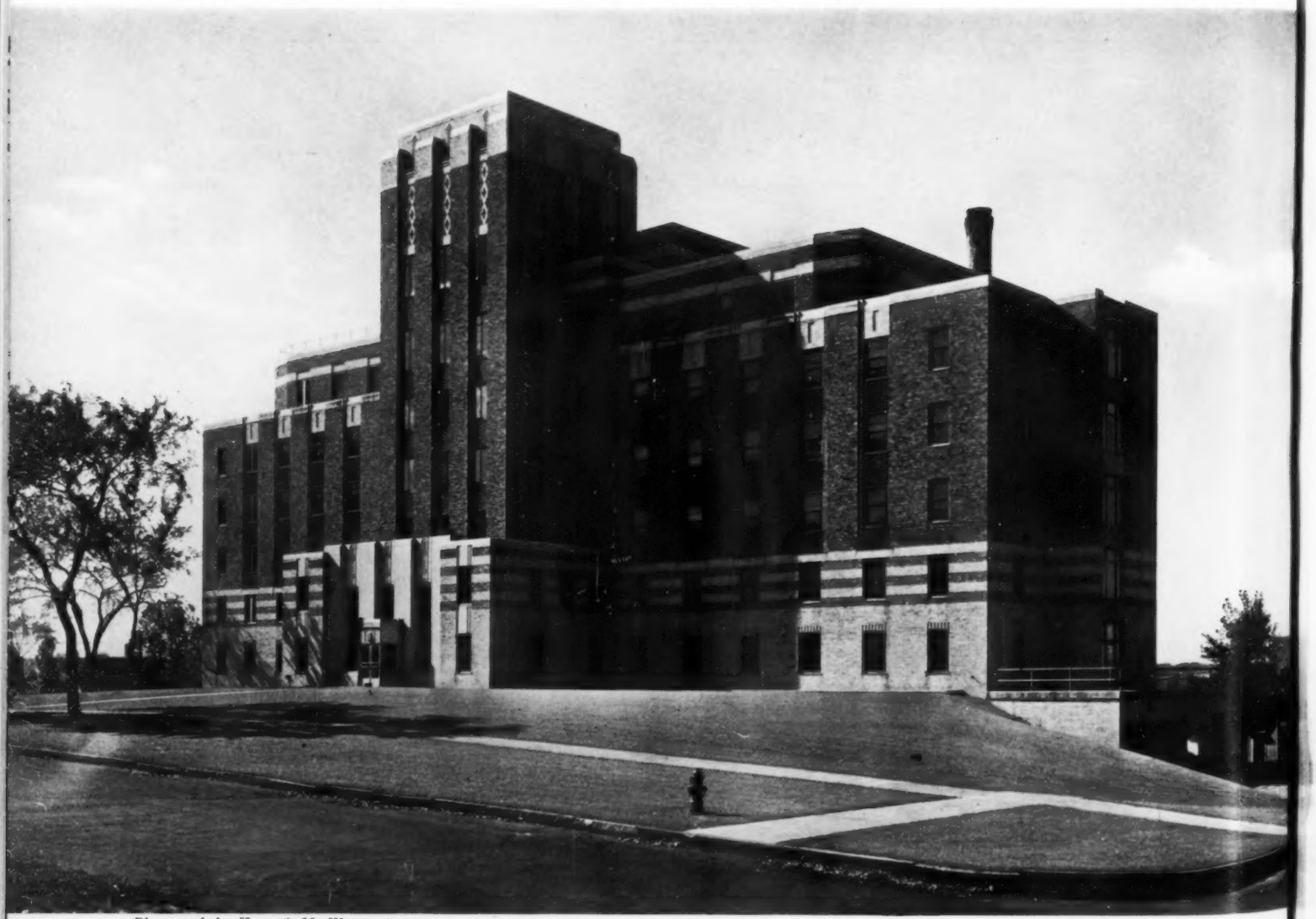


SECOND AND THIRD FLOOR PLAN

GROUND FLOOR PLAN

BETHESDA HOSPITAL
ST. PAUL, MINNESOTA

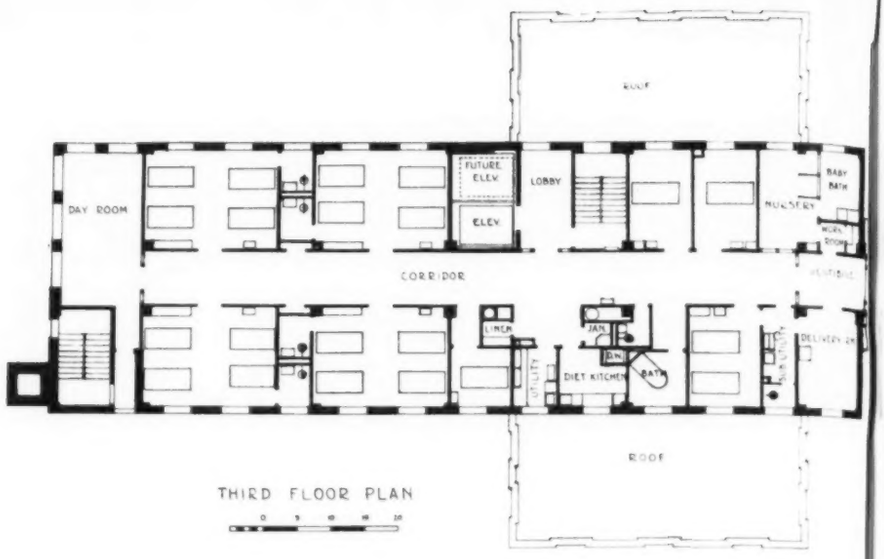
ELLERBE & CO., ARCHITECTS



Photograph by Kenneth M. Wright Studio

General hospital: 135 beds; two 12-bed wards for free patients. Features: Concrete frame, brick walls; mastic tile floors, acoustical ceilings in corridors; central food service and central dishwashing with tray conveyor and dumb-waiters.

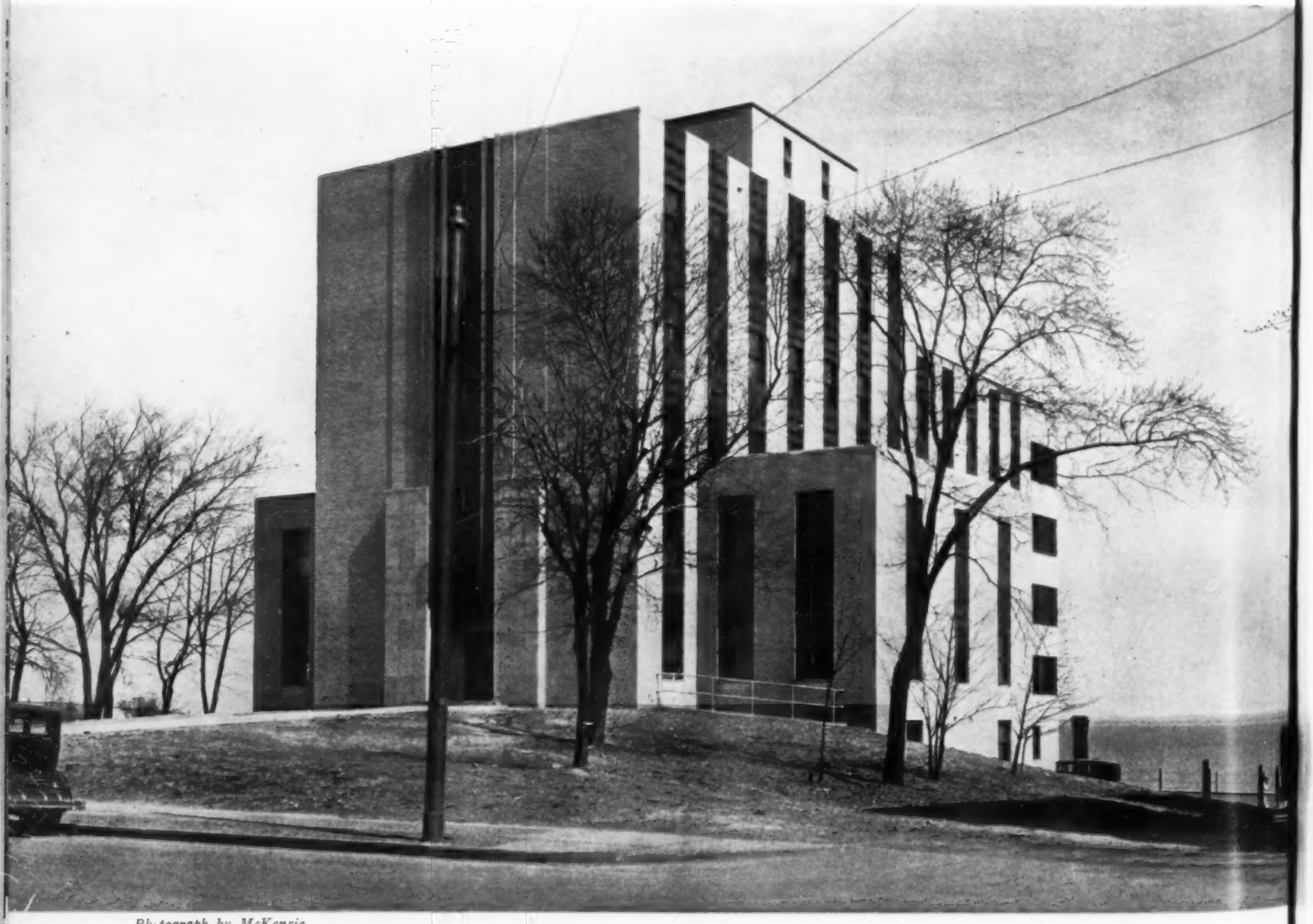
Cost, including refrigerators, kitchen and laundry equipment, elevators, humidifiers, sterilizers, heating plant, electric generators, light fixtures, architects' fees: $498,000, or 53¢ a cubic foot.



THIRD FLOOR PLAN

MILLER MEMORIAL HOSPITAL IN DULUTH, MINNESOTA

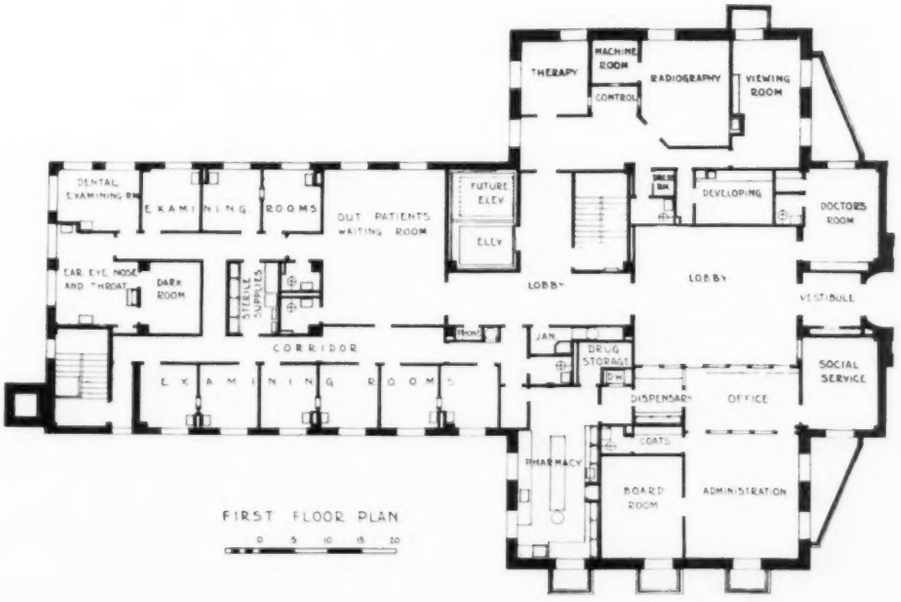
ELLERBE & CO., ARCHITECTS — ERICKSON & CO., ASSOCIATED ARCHITECTS



Photograph by McKenzie

The location of this 46-bed hospital is midway between the two principal hospitals in Duluth. The rear porches overlook Lake Superior. The building is designed for a four-story vertical expansion. One of its principal features is a very large Out-Patient Department.

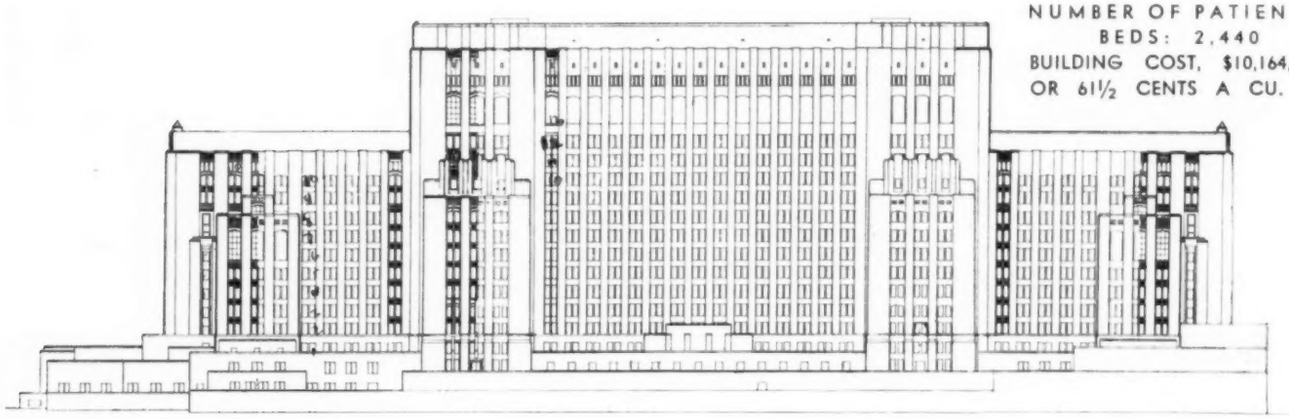
Cost, including elevator, refrigeration, kitchen and laundry equipment, sterilizers, light fixtures, heating plant and architects' fees: $180,000, or 43¢ a cubic foot.



LOS ANGELES COUNTY GENERAL HOSPITAL: ACUTE UNIT

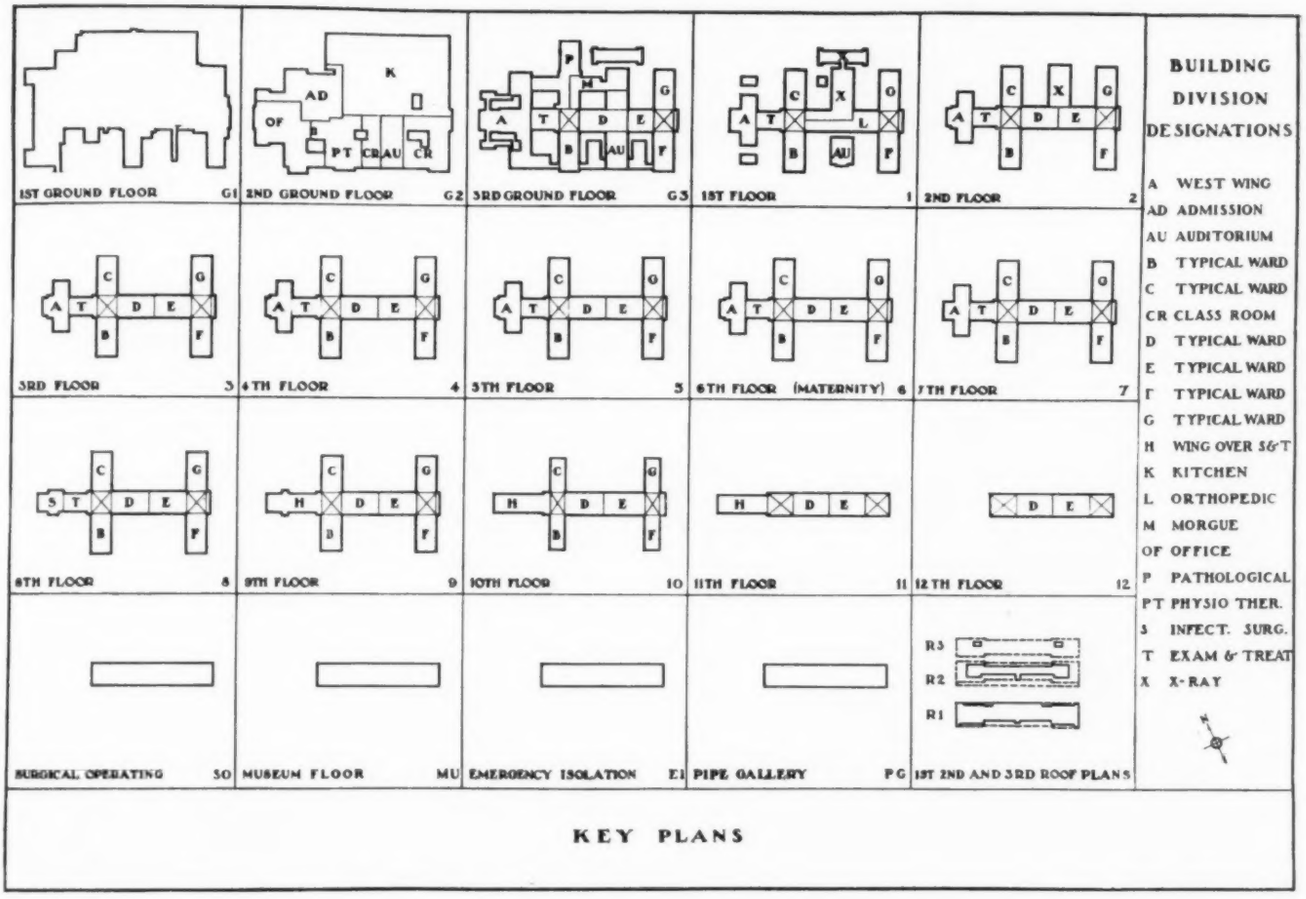
DESIGNED BY THE ALLIED ARCHITECTS ASSOCIATION OF LOS ANGELES

(EDWIN BERGSTROM, MYRON HUNT, PIERPONT DAVIS, SUMNER P. HUNT, WILLIAM RICHARDS)

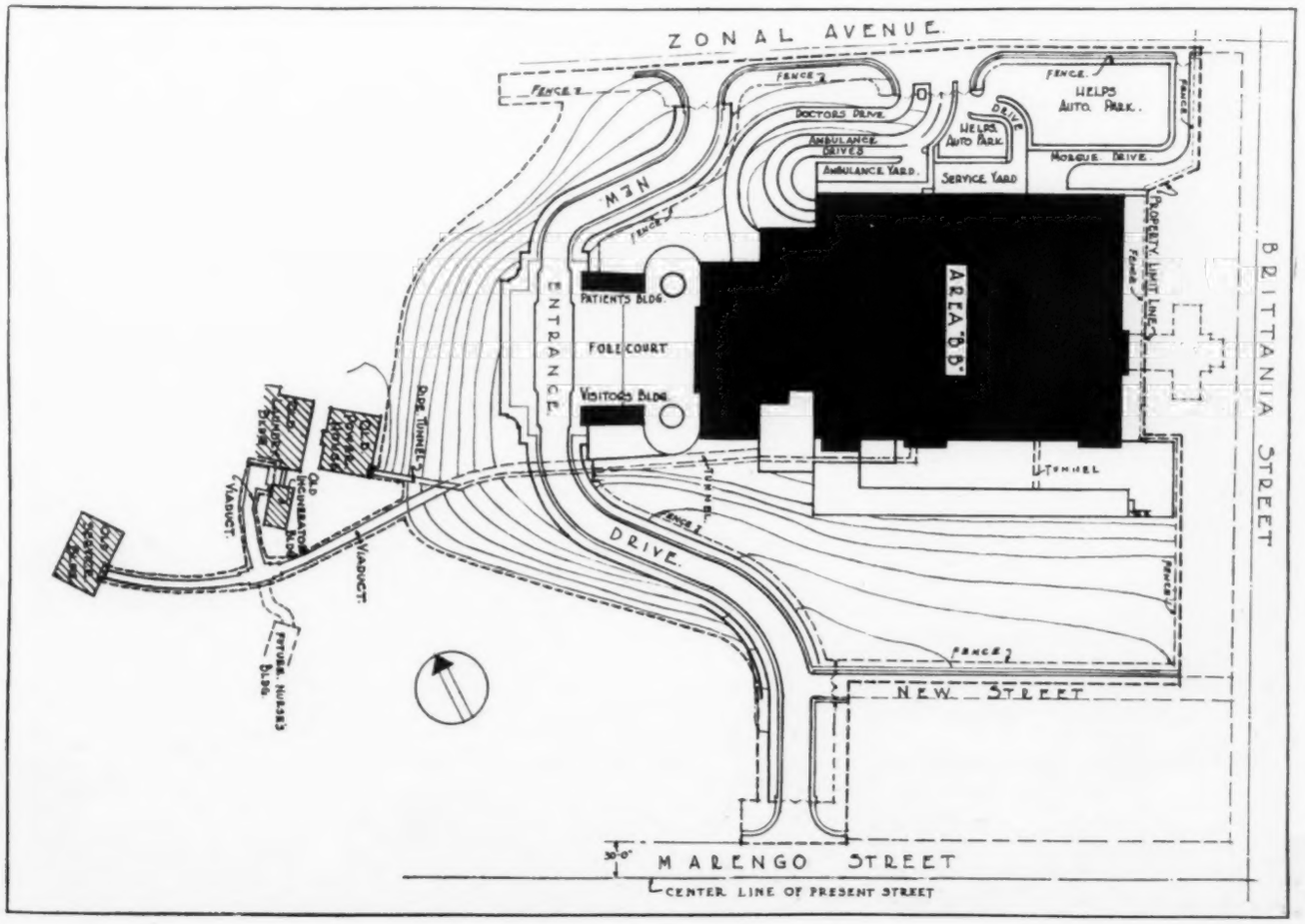


NUMBER OF PATIENTS' BEDS: 2,440
BUILDING COST, $10,164,180, OR 61½ CENTS A CU. FT.

Photograph by Dick Whittington


1ST GROUND FLOOR G1
2ND GROUND FLOOR G2
3RD GROUND FLOOR G3
1ST FLOOR 1
2ND FLOOR 2
3RD FLOOR 3
4TH FLOOR 4
5TH FLOOR 5
6TH FLOOR (MATERNITY) 6
7TH FLOOR 7
8TH FLOOR 8
9TH FLOOR 9
10TH FLOOR 10
11TH FLOOR 11
12TH FLOOR 12
SURGICAL OPERATING SO
MUSEUM FLOOR MU
EMERGENCY ISOLATION EI
PIPE GALLERY PG
1ST 2ND AND 3RD ROOF PLANS
R3
R2
R1
BUILDING DIVISION DESIGNATIONS
A WEST WING
AD ADMISSION
AU AUDITORIUM
B TYPICAL WARD
C TYPICAL WARD
CR CLASS ROOM
D TYPICAL WARD
E TYPICAL WARD
F TYPICAL WARD
G TYPICAL WARD
H WING OVER S&T
K KITCHEN
L ORTHOPEDIC
M MORGUE
OF OFFICE
P PATHOLOGICAL
PT PHYSIO THER.
S INFECT. SURG.
T EXAM & TREAT
X X-RAY

KEY PLANS

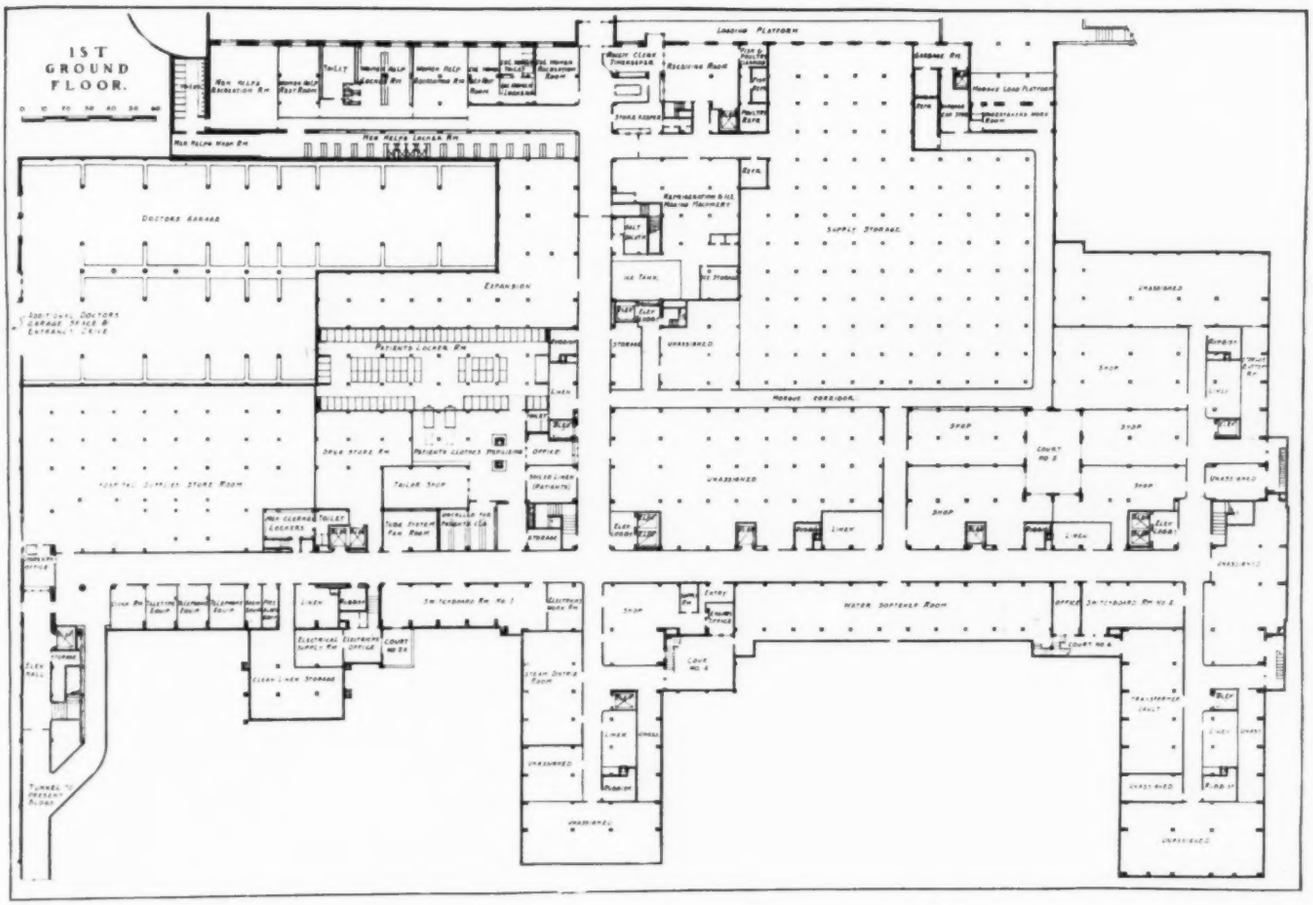

ZONAL AVENUE
FENCE
DOCTORS DRIVE
AMBULANCE DRIVES
AMBULANCE YARD
SERVICE YARD
HELPS AUTO PARK.
MORGUE DRIVE
NEW
ENTRANCE
PATIENTS BLDG.
FOLLICOURT
VISITORS BLDG.
AREA "B.B."
PROPERTY LINE
BRITTANIA STREET
TUNNEL
DRIVE
NEW STREET
MARENGO STREET
CENTER LINE OF PRESENT STREET
VIADUCT
FUTURE NURSES BLDG.

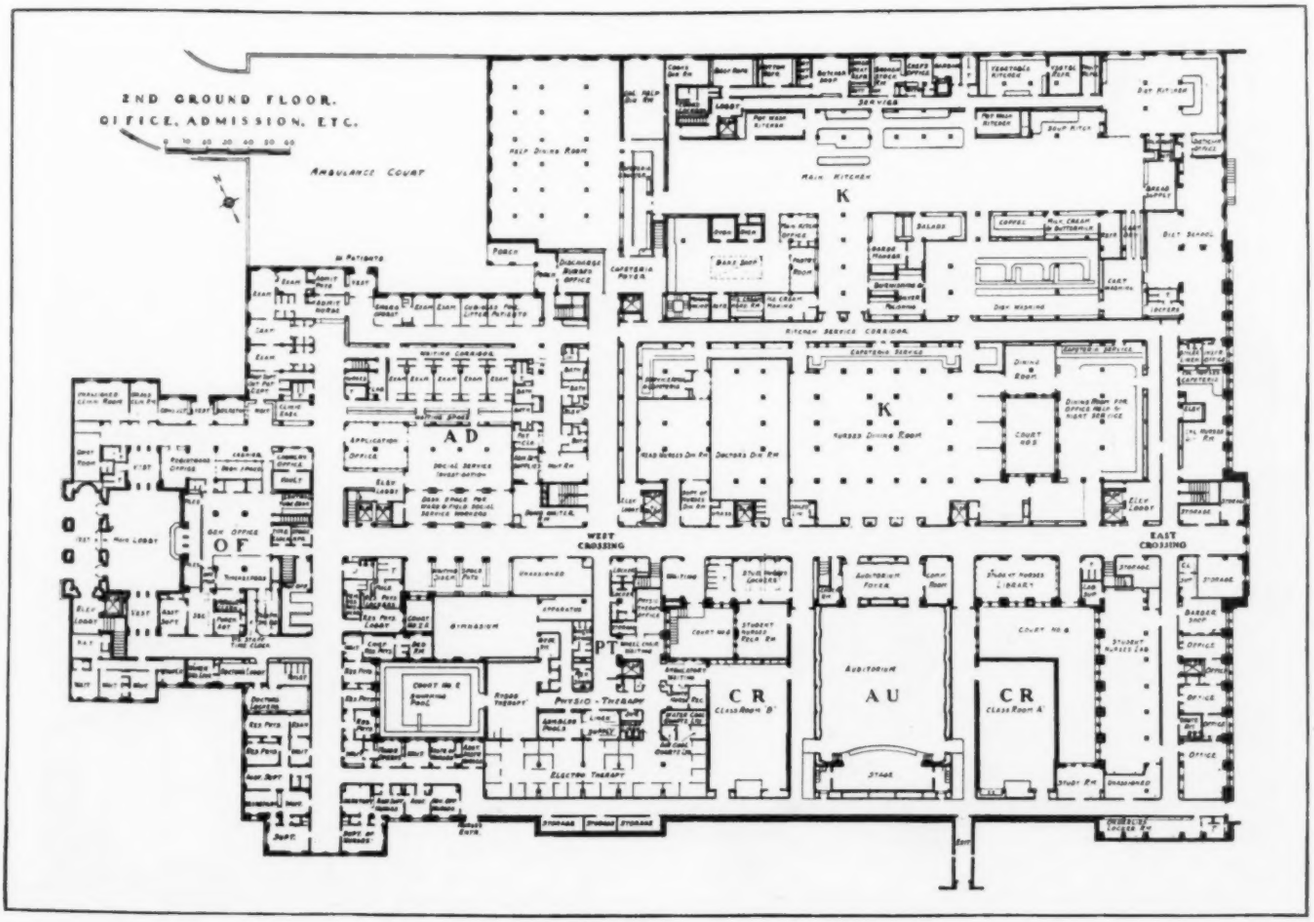
LOS ANGELES COUNTY GENERAL HOSPITAL: ACUTE UNIT

DESIGNED BY THE ALLIED ARCHITECTS ASSOCIATION OF LOS ANGELES

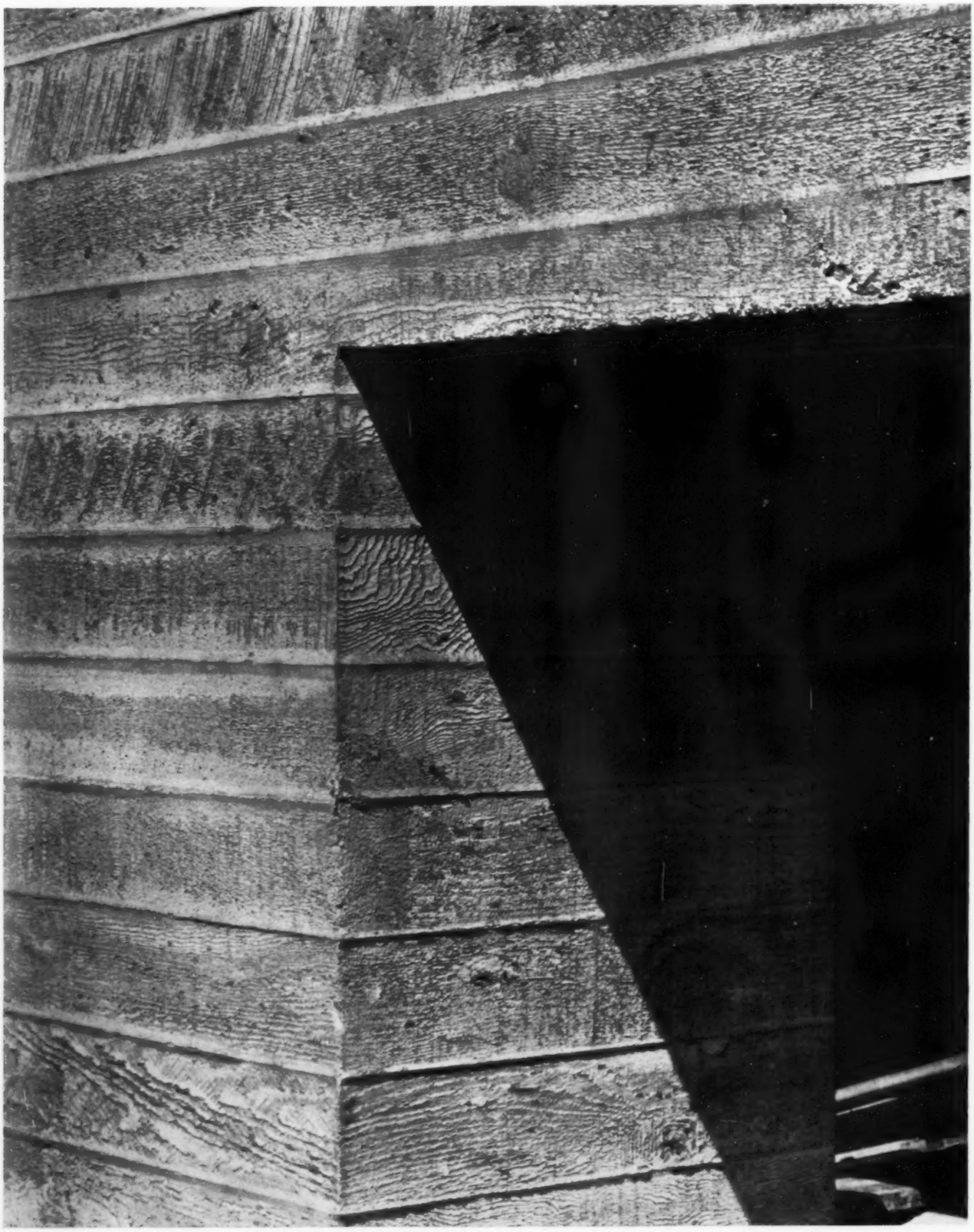
VIEW OF CLINICAL SURGERY ROOM FROM OBSERVATION GALLERY

Photograph by W. P. Woodcock

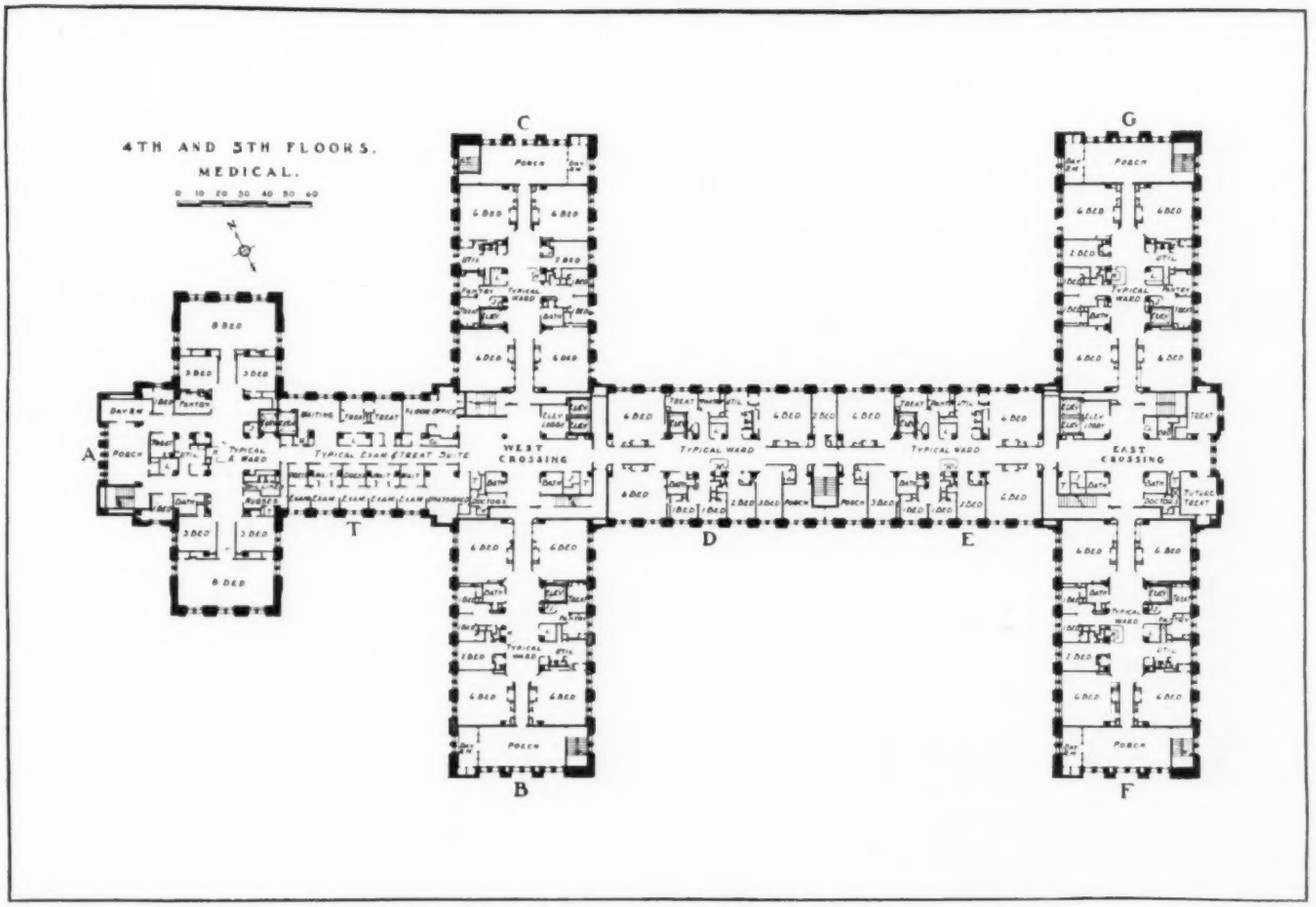

1ST GROUND FLOOR.
DOCTORS GARAGE
EXPANSION
SUPPLY STORAGE
UNASSIGNED
SHOP
HOSPITAL SUPPLIES STORE ROOM
TAILOR SHOP
WATER SOFTENER ROOM
SWITCHBOARD RM. NO. 1
SWITCHBOARD RM. NO. 2
TUNNEL TO PRESENT BLDG.

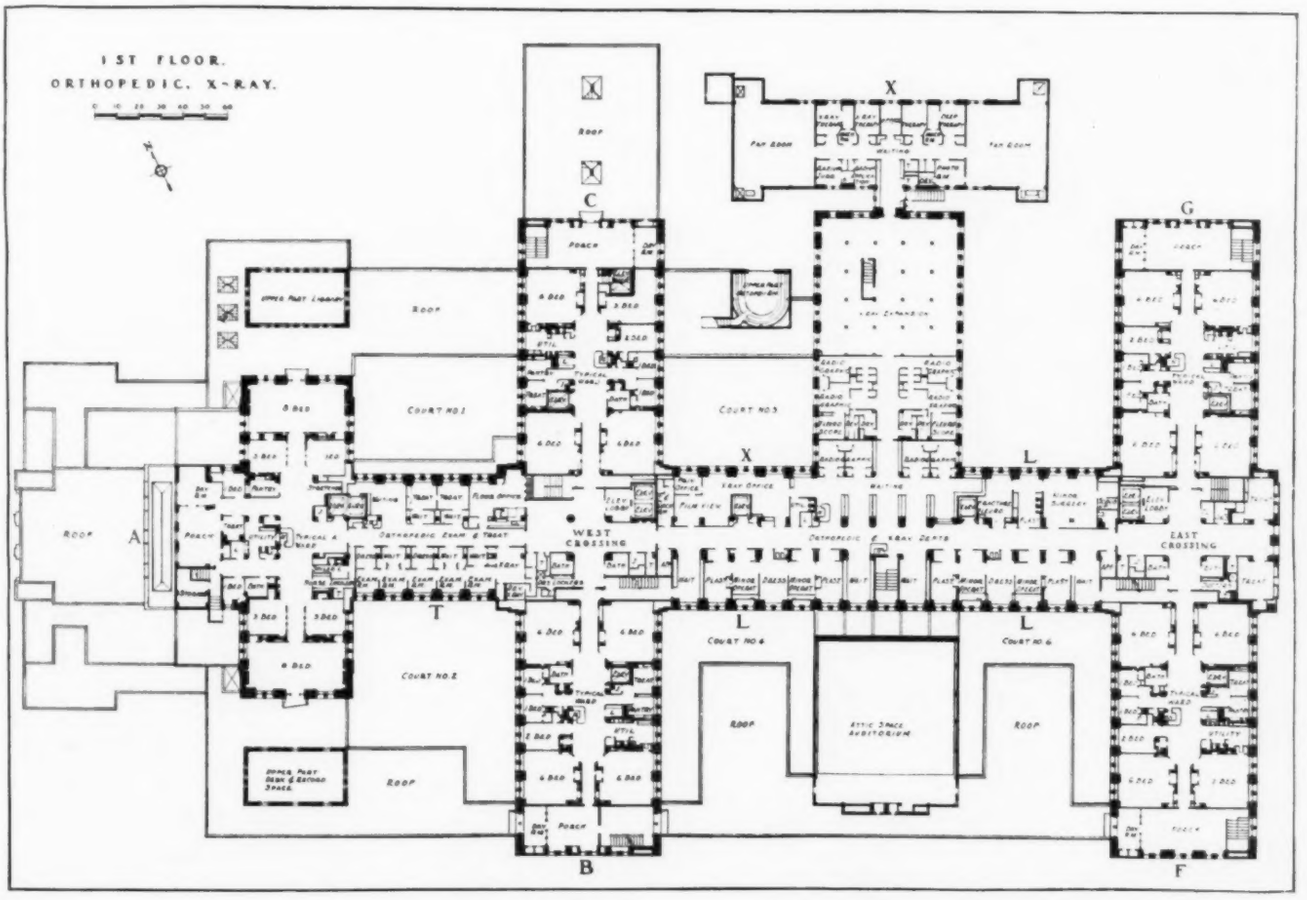

2ND GROUND FLOOR.
OFFICE, ADMISSION, ETC.
AMBULANCE COURT
MAIN KITCHEN
K
DINING ROOM
AD
OF
PT
CR
CLASS ROOM 'B'
AU
AUDITORIUM
CR
CLASS ROOM 'A'
WEST CROSSING
EAST CROSSING
GYMNASIUM
PHYSIO-THERAPY
ELECTRO THERAPY

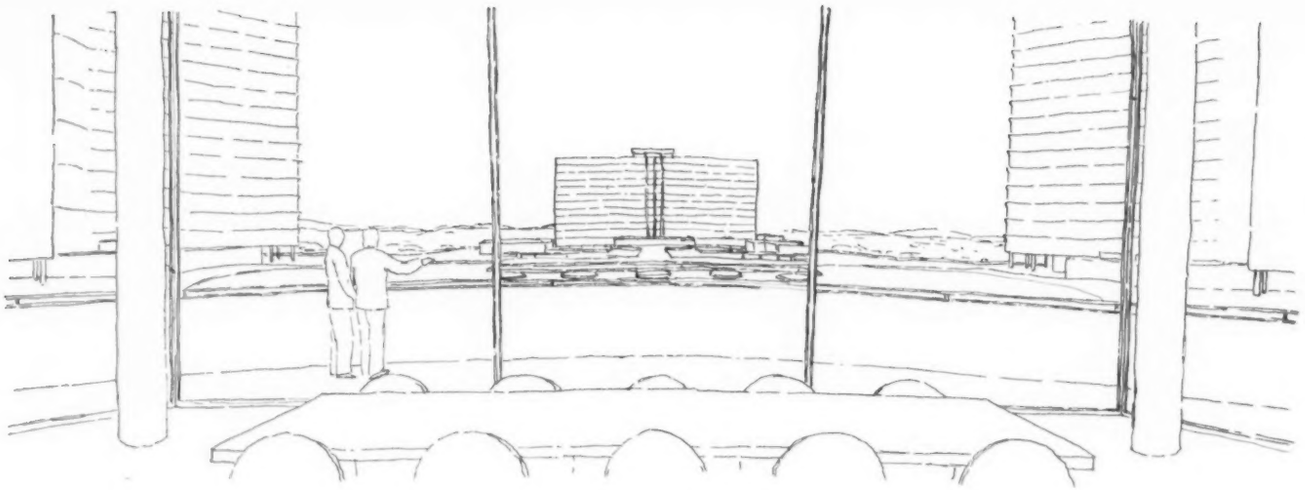
CLOSE-UP VIEW SHOWING TEXTURE OF EXTERIOR SURFACE



Photograph by Dick Whittington

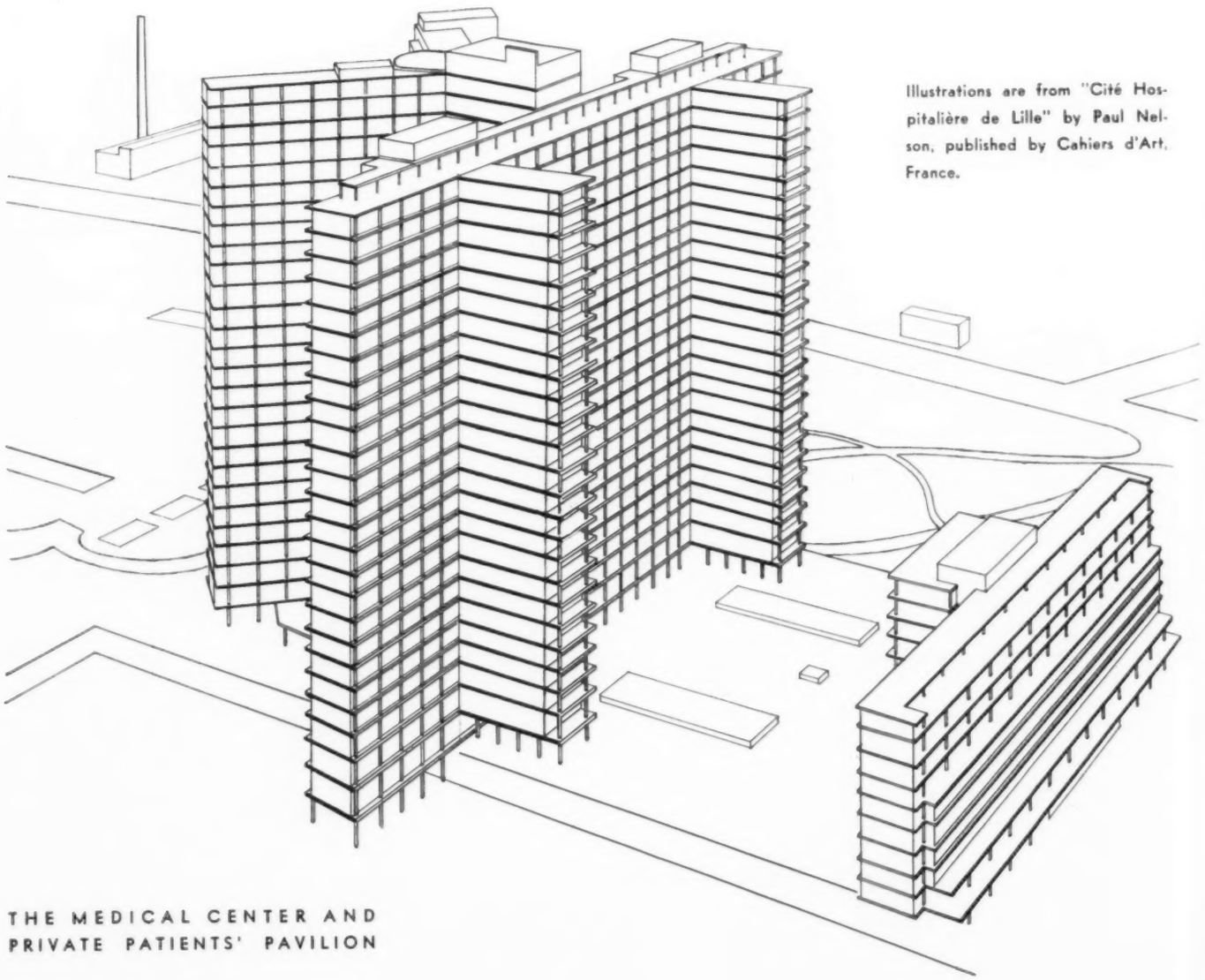

4TH AND 5TH FLOORS.
MEDICAL.
0 10 20 30 40 50 60
C
G
A
T
D
E
B
F
WEST CROSSING
EAST CROSSING
TYPICAL WARD
TYPICAL EXAM & TREAT SUITE
PORCH


1ST FLOOR.
ORTHOPEDIC. X-RAY.
0 10 20 30 40 50 60
X
C
G
A
T
L
B
F
ROOF
COURT NO.1
COURT NO.2
COURT NO.3
COURT NO.4
COURT NO.6
WEST CROSSING
EAST CROSSING
ORTHOPEDIC EXAM & TREAT
X-RAY OFFICE
ATTIC SPACE AUDITORIUM
PORCH



The administration of the hospitals of Lille (which controls all the public hospitals and charitable organizations of this city) intends to centralize the existing institutions in combination with a school of medicine to form the Health City of Lille. The medical center includes a pavilion for private patients, a school for nurses and midwives, a home for the pensioned, and general services.

HEALTH CITY OF LILLE, FRANCE . . . PAUL NELSON, ARCHITECT

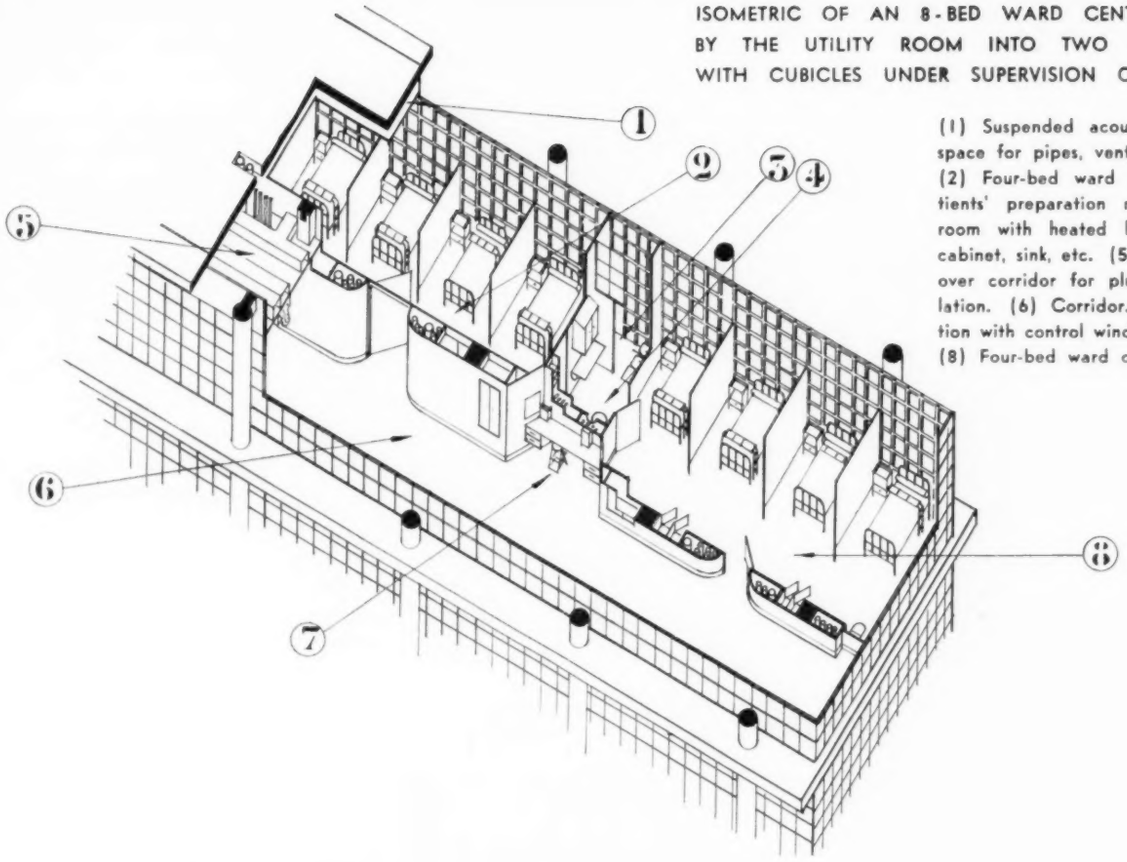


Illustrations are from "Cité Hospitalière de Lille" by Paul Nelson, published by Cahiers d'Art, France.

THE MEDICAL CENTER AND
PRIVATE PATIENTS' PAVILION

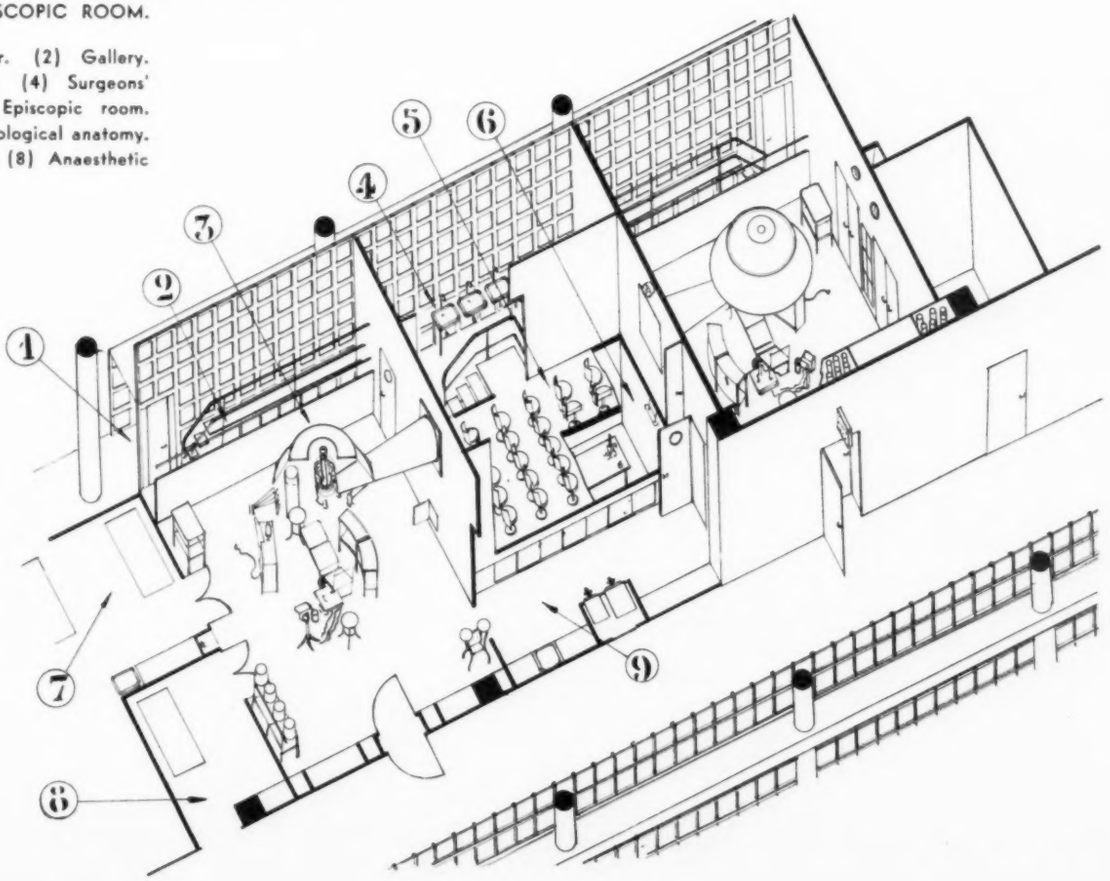
ISOMETRIC OF AN 8-BED WARD CENTRALLY DIVIDED BY THE UTILITY ROOM INTO TWO 4-BED WARDS WITH CUBICLES UNDER SUPERVISION OF ONE NURSE

(1) Suspended acoustical ceiling with space for pipes, ventilation, tubes, etc. (2) Four-bed ward cubicles. (3) Patients' preparation room. (4) Utility room with heated linen and bedpan cabinet, sink, etc. (5) Horizontal space over corridor for plumbing and ventilation. (6) Corridor. (7) Nurses' station with control window for each ward. (8) Four-bed ward cubicles.



AN OPERATING SUITE CONSISTING OF TWO OPERATING ROOMS. STUDENTS ARE NOT PRESENT IN THESE ROOMS BUT WATCH THE OPERATIONS AS PROJECTED ON A SCREEN IN THE EPISCOPIC ROOM.

(1) Students' corridor. (2) Gallery. (3) Operating room. (4) Surgeons' scrub-up room. (5) Episcopic room. (6) Laboratory of pathological anatomy. (7) Awakening room. (8) Anaesthetic room.



CONTRACTS FOR HOSPITAL AND INSTITUTIONAL BUILDING: 1925-1935

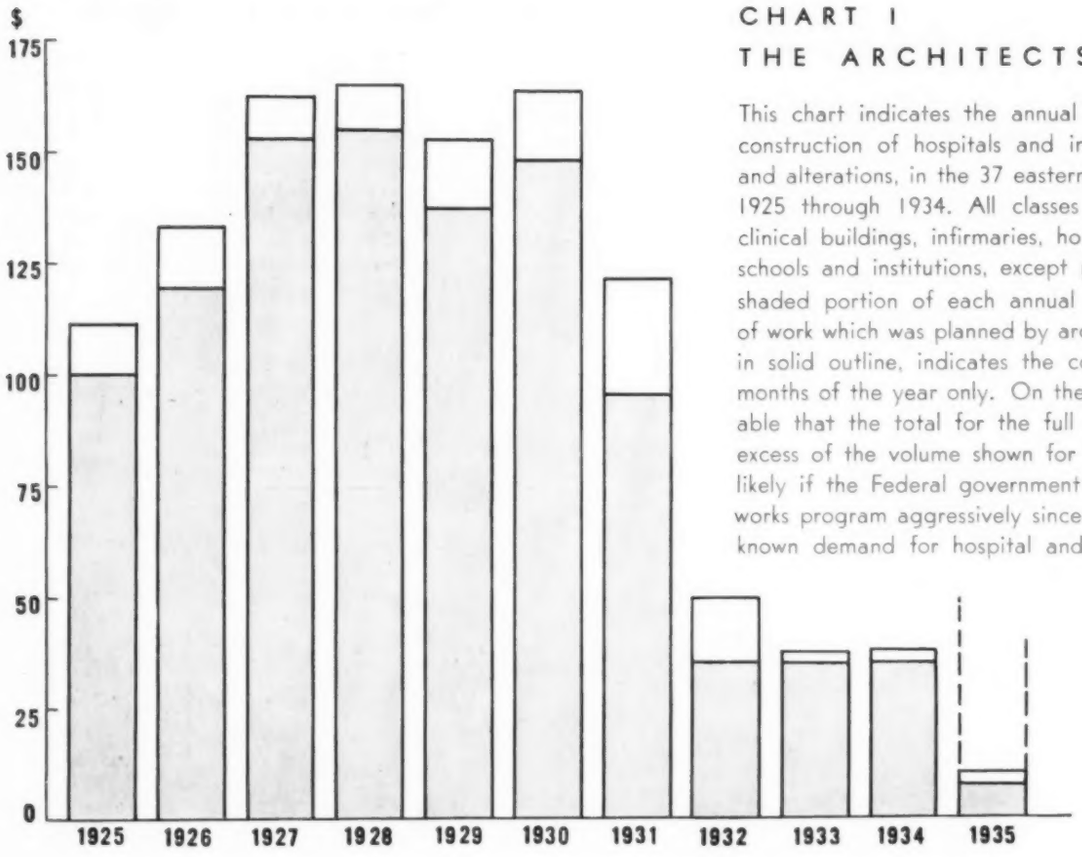


CHART 1
THE ARCHITECTS' INFLUENCE

This chart indicates the annual contract volumes for the construction of hospitals and institutions, both new work and alterations, in the 37 eastern States for the years from 1925 through 1934. All classes of hospitals, sanitariums, clinical buildings, infirmaries, homes, almshouses, industrial schools and institutions, except prisons, are included. The shaded portion of each annual bar indicates the volume of work which was planned by architects. The bar for 1935, in solid outline, indicates the condition for the first four months of the year only. On these results it appears probable that the total for the full year will be somewhat in excess of the volume shown for 1934; this is all the more likely if the Federal government is to push its new public works program aggressively since there is a relatively large known demand for hospital and institutional projects.

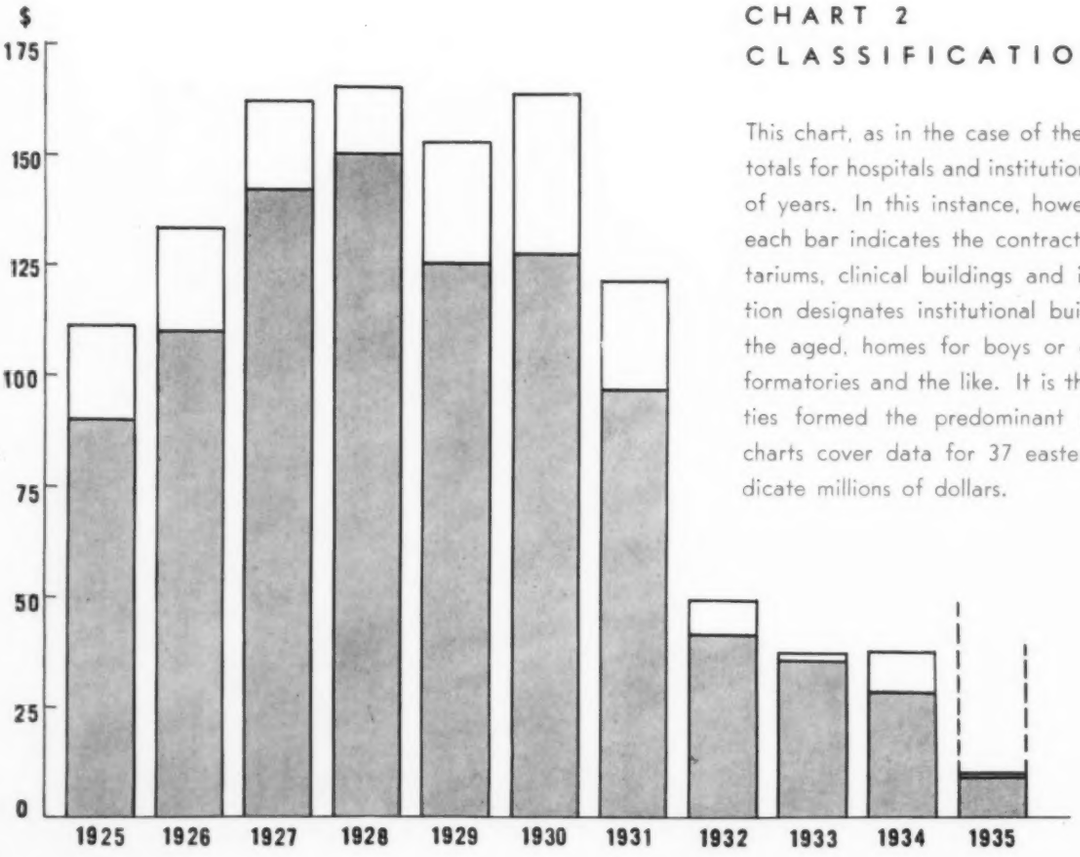
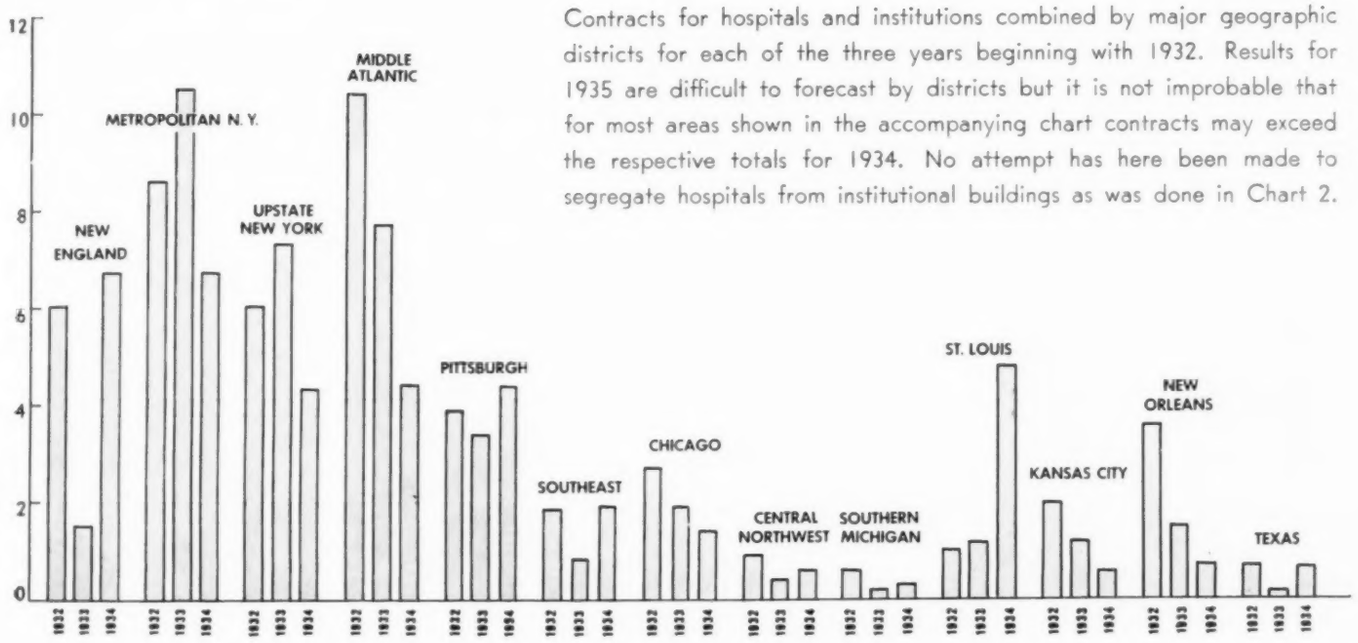


CHART 2
CLASSIFICATION BY TYPES

This chart, as in the case of the first, pictures the contract totals for hospitals and institutions over the indicated period of years. In this instance, however, the shaded portion of each bar indicates the contract volume for hospitals, sanitariums, clinical buildings and infirmaries. The white portion designates institutional buildings—asylums, homes for the aged, homes for boys or girls, industrial schools, reformatories and the like. It is thus seen that hospital facilities formed the predominant portion of each bar. All charts cover data for 37 eastern States only. Figures indicate millions of dollars.

CHART 3
DISTRIBUTION BY GEOGRAPHICAL AREAS

Contracts for hospitals and institutions combined by major geographic districts for each of the three years beginning with 1932. Results for 1935 are difficult to forecast by districts but it is not improbable that for most areas shown in the accompanying chart contracts may exceed the respective totals for 1934. No attempt has here been made to segregate hospitals from institutional buildings as was done in Chart 2.



TRENDS IN HOSPITAL CONSTRUCTION

By L. SETH SCHNITMAN, Chief Statistician, F. W. Dodge Corporation

Since the war virtually two billion dollars have been expended in the United States on the erection of new hospitals and institutional buildings and the extension of their existing plants. Over the 16-year period which began with 1919 an average of not far from $125,000,000 per year—based upon known results for the area east of the Rocky Mountains— has gone into this specialized form of shelter-housing for the sick, the aged, the infirm, the recalcitrant.

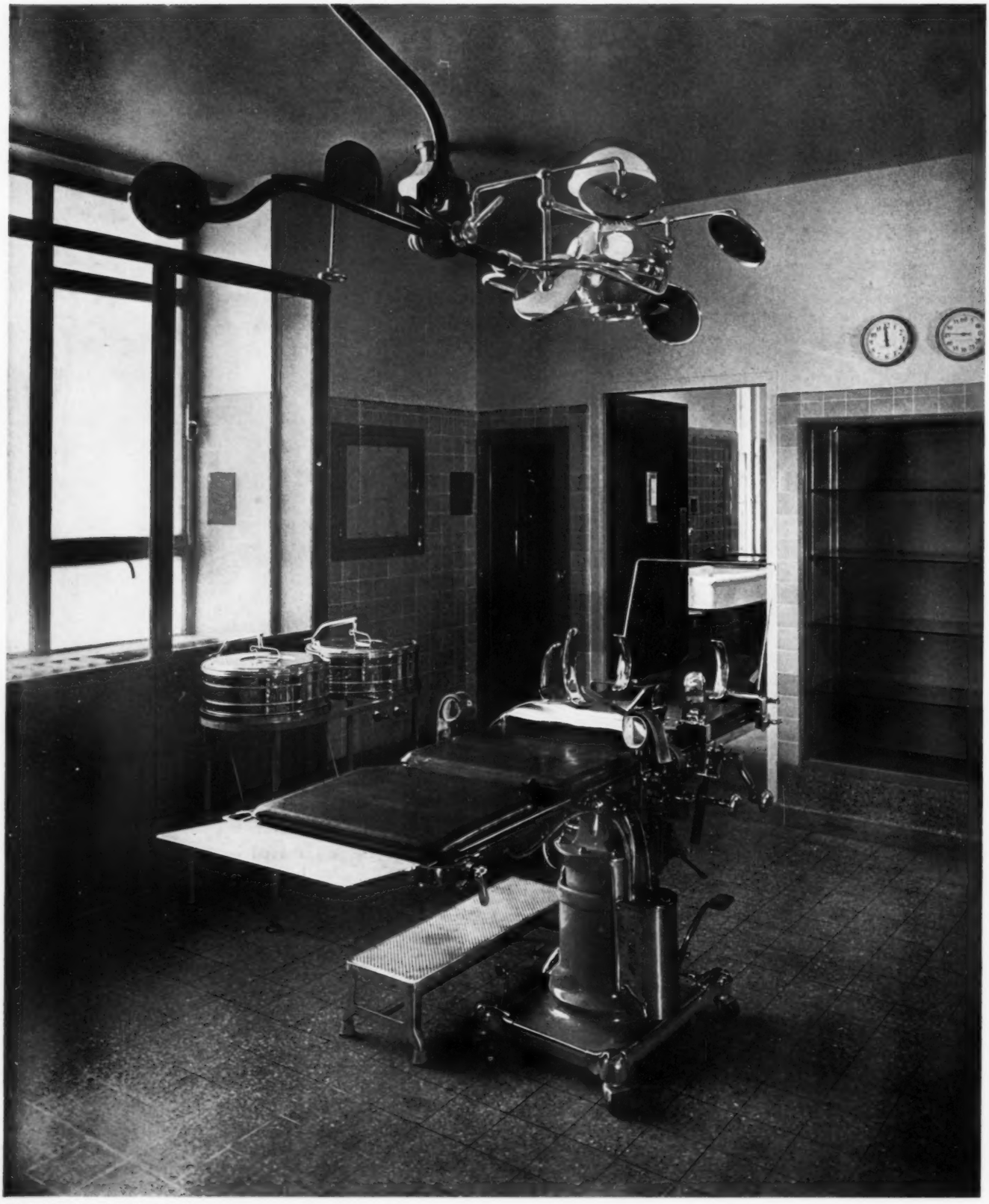
For all practical purposes 1928 was the peak year, while 1933 was the year of lowest volume. In 1928 contracts for construction of hospitals and institutional buildings in the country as a whole probably approximated $200,000,000; in 1933 awards had receded to a level somewhat below $50,000,000. In good times and bad this class of building represents roughly 3 per cent of the total construction volume, but its importance to the architect transcends this seemingly small percentage. Customarily most such buildings are designed by architects; in fact, over the 5-year period ended 1934 approximately 85 per cent of all hospital and institutional buildings were so designed.

During each of the three years, 1932 through 1934, the quantitative volume of architect-planned institutional building, though low, was virtually on an even keel. Related to the total volume of such building, however, an important change occurred between 1932 and 1933; the archiect's influence had improved from the depression-induced percentage of only 71 for 1932 to 92 for 1933 where it remained for the year 1934 as well.

Loans and grants to states, cities, and local public and quasi-public bodies for hospital and institutional buildings under the old PWA program approximated $37 million. This sum together with the funds to be locally raised it has been estimated, will produce almost $60 million in construction. One hundred and eighty-two projects, new and alteration, are involved in this program, some of which are already completed. In addition 80 Federal hospital projects were provided for with a total allotment of almost $13 million.

Private funds for hospital and institutional building are still scarce. When allotments under the old PWA program were stopped because funds were exhausted more than $75 million in applications for loans and grants for hospital enterprises were pending estimated to cost in excess of $125,000,000; this was exclusive of a sizable amount of desirable Federal buildings of similar types.

What may be expected from the new public works program as to hospital and institutional construction is difficult to determine, but there are doubtless many meritorious projects which will be made possible out of the new fund.



Photograph by Drix Duryea, Inc.

ABOVE: MEADOWBROOK HOSPITAL AT HEMPSTEAD, LONG ISLAND. OFFICE OF JOHN RUSSELL POPE AND WILLIAM F. McCULLOCH, ARCHITECTS; S. S. GOLDWATER, M.D., CONSULTANT.

ON OPPOSITE PAGE: SYRACUSE MEMORIAL HOSPITAL AT SYRACUSE, NEW YORK. OFFICE OF JOHN RUSSELL POPE AND DWIGHT JAMES BAUM, ARCHITECTS.

GENERAL OPERATING ROOMS

PLANNING OF HOSPITALS AND HOSPITAL UNITS

The following tabulation of some of the more important considerations in hospital planning is given as a possible aid to architects and others interested in such work. In reading this tabulation it should be borne in mind that while the elements of a hospital plan are supposed to function in a definite interrelationship the plan cannot be developed merely by the application of a formula. An expert analysis of local conditions and requirements is a necessary foundation upon which to formulate any hospital building program, and on this analysis depends to a large extent the determination of just what and how much is to be included in a given program. This is particularly true in respect to the use of arbitrary ratios for deriving from the population figures a key to the total number of beds required or to the correct numbers in the various classifications. A careful appraisement of the situation by a reliable hospital consultant is much more likely to result in a well balanced building program than by arbitrary use of formulas.

PREPARED BY GEORGE S. HOLDERNESS CF THE OFFICE OF JOHN RUSSELL POPE, ARCHITECT

Photograph by Samuel H. Gottscho

Gottscho

OPERATING DEPARTMENT CORRIDOR, SHOWING BUILT-IN INSTRUMENT CABINETS, IN SYRACUSE MEMORIAL HOSPITAL

HOSPITAL UNITS

TYPE OF HOSPITAL. General: special divisions: teaching facilities: clinic. **Special:** maternity: pediatric (children's): orthopedic: crippled and ruptured: isolation: tuberculosis: cancer: convalescent: neuro-psychopathic: urological: dental: eye, ear, nose, and throat. **Medical Center:** general hospital: special hospitals: clinic: medical school.

SIZE. Dependent on character of community, specific ambitions of building committee, and available funds. Affected by number of existing hospitals, history of community as to sickness of various kinds, urban or rural nature of location, degree of local tendency toward hospitalization of the ill, and probable growth of the community. Analysis of these conditions recommended rather than use of formulas.

SITE. Size and shape: adaptable space for proposed building or group, permitting grounds where possible; space for future horizontal extension. **Accessibility:** easily reached via public transportation lines and highways; delivery of supplies. **Environment:** remote from playgrounds, ball parks and factories, and not adjacent to car lines or railroad tracks; pleasant outlook upon extensive lawns, natural park, or countryside; absence of swamps and other sources of insects; clean air, devoid of smoke, dust and other irritants. **Orientation:** sunny exposure for patients' rooms without loss of agreeable outlook. **Topography:** easy natural drainage; location at top of sloping ground rather than in depression. **Service facilities:** presence of water, gas, electric, drainage, and sewage disposal lines. **Permanency:** probable continuance of present aspect of surroundings. **Relation to other hospitals:** advantages vs. disadvantages of proximity; inclusion as a part of medical center.

LIGHTING FIXTURE USED IN LOS ANGELES COUNTY HOSPITAL

Woodcock

BUILDINGS. Number: dependent upon size of institution; one composite building or several buildings inter-connected at all floors, for administration, general patients, nursing facilities, operating section, X-ray, laboratories, kitchen, dining rooms, and clinic; separate buildings or wings for special divisions, such as maternity, etc., where volume demands; isolation building; nurses' home; servants' quarters; garage; power house; laundry, if not contained in main buildings; medical school, where included in program; the small institution to be housed completely in one building; the large institution requires separate buildings or wings for administration, clinic, and other features. **Type:** vertical vs. horizontal; for general hospital purposes multi-story buildings offer structural economies in the vertical repetition of similar elements and are more wieldy in administration; horizontal type and separate pavilions suited for convalescents, tuberculars, and others requiring easy access to grounds; I-shaped plan best for maximum lighting and ease of control; lateral extensions for kitchen, laundry, etc. **Location:** provision of surrounding grounds; approaches to various entrances for persons and supplies; location of ambulance, morgue and service entrances remote

Gottscho

A PRIVATE PATIENT'S ROOM IN SYRACUSE MEMORIAL HOSPITAL

from patients' outlook; power house, if detached, at north end of group; location of patients' buildings at south end of group to insure against interruption of proper exposure for patients' rooms; roads on property; space for truck-gardening, and recreational areas for nurses and staff; allocation of space for future buildings or wings; parking spaces. **Interconnection:** if not in one composite structure, the units of the patients' group (except isolation hospital) connected by inclosed corridors at all floors; other buildings preferably connected with patients' group and with one another by tunnels, for passage of personnel and accommodation of service piping.

PATIENTS' BEDROOMS

CLASSIFICATION OF SERVICE. Receiving, medicine, surgery, maternity, isolation, convalescent, psychopathic.

SEGREGATION OF PATIENTS. By sex and age—men, women, children, infants.

CAPACITIES. Private, semi-private, wards, preferably not mixed in the same nursing unit; wards up to 35 or 40 beds sometimes used, but 16-bed ward is maximum recommended by most authorities.

SIZES. Private rooms: 9'0" x 12'0" to 11'0" x 15'6". **Semi-private rooms:** 11'0" x 15'0" to 12'0" x 15'6". **Wards:** minimum floor area, including circulation, 80 sq. ft. per adult's bed and 50 sq. ft. per child's bed. Minimum volume, 800 cu. ft. per bed in adults' wards and 500 cu. ft. per bed in children's wards.

CEILING HEIGHTS. 10'0" recommended minimum.

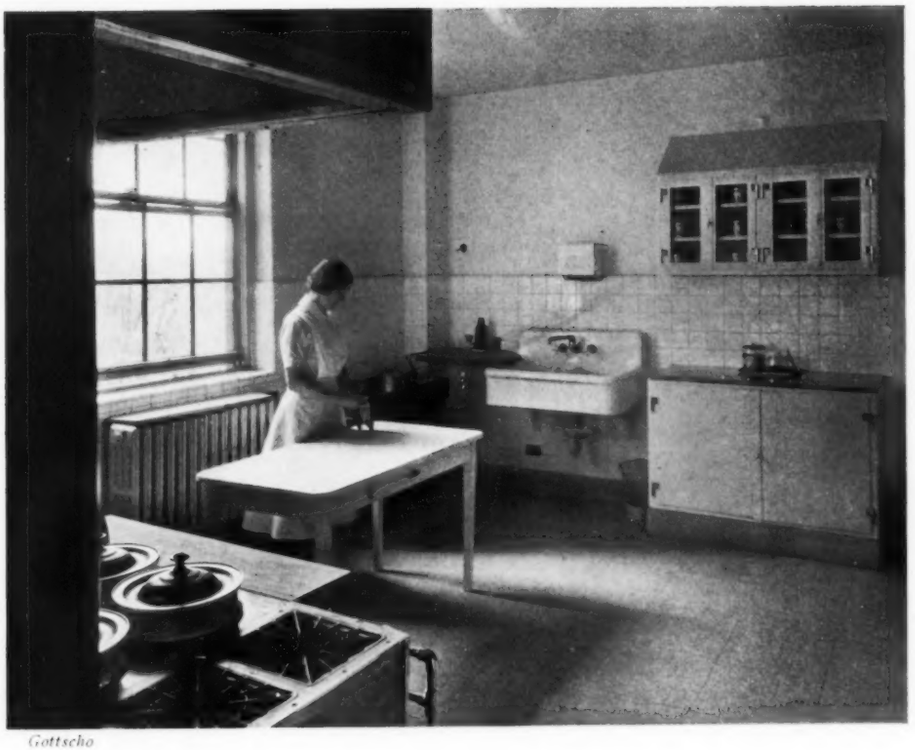
EXPOSURE. Maximum sunlight and protection against cold desirable; buildings running north and south afford morning sun in some patients' rooms and afternoon sun in others; where possible building should run east and west, with south side exclusively for patients and with utilities concentrated on north side.

SEPARATION WITHIN WARDS. Portable screens or curtains on overhead track; fixed screens about 7'0" high and with panels of translucent glass recommended for contagious wards.

LIGHTING, NATURAL AND ARTIFICIAL. Windows: minimum areas, in wards 1 sq. ft. to every 5 sq. ft. of floor area, in private and semi-private rooms 1 sq. ft. to every 8 sq. ft. of floor area. **General illumination (electric):** ceiling fixtures with minimum total of 1½ to 2 watts per sq. ft. in wards and 1 watt per sq. ft. in private and semi-private rooms. Semi-indirect type recommended, with auxiliary lamping for low-intensity illumination.

LIGHTING FIXTURE USED IN LOS ANGELES COUNTY HOSPITAL

Woodcock



Gottscho

A TYPICAL DIET KITCHEN IN SYRACUSE MEMORIAL HOSPITAL

Miller Co.

SEMI-DIRECT LIGHTING FIXTURE

FURNITURE AND EQUIPMENT. **Private and semi-private rooms:** beds, standard sizes 3'0" x 6'6" for adult and 2'6" x 5'0" for child; bedside utility table about 16" x 20" and reading and feeding table, for every bed; easy and straight chairs as determined by hospital; lavatory (with arm-action control) or private bathroom or toilet and lavatory compartment; louvered night light in wall near floor, switched at door; dome type indicator light over door on corridor side; for every bed—one double jack radio receptacle, one duplex convenience outlet, one nurses' call (one, with double extension cord, will suffice for two patients), all these to be about 4'0" above floor; possible installation in every room, dependent upon character and refinement of service contemplated—one telephone jack, one electro-cardiograph outlet, one surgical vacuum outlet, all near head of bed. **Wards:** same as for private and semi-private rooms except no easy chairs or telephone jacks; possible limitation of bedside tables to one for every pair of beds, and night lights to be distributed about one to every 5 or 6 beds.

BATHROOMS AND TOILETS. **General use:** toilets and baths in separate rooms; lavatory in every toilet room; one toilet stall for every 10 patients; one bath for every 20 or 30 patients, except more required for convalescent and other ambulatory patients; stall doors open out. **Private accommodations:** the private bathroom, with tub, lavatory, and toilet; the private toilet room with lavatory and toilet; doors opening toward bedrooms; toilets with or without special fittings for bedpan washing. **Special notes:** tubs in general baths preferably arranged with working space at one end and both sides; children's fixtures of smaller size, and tubs raised on pedestals; separate toilets and baths for maternity section, with showers used instead of tubs.

TYPICAL WARD BED USED IN LOS ANGELES COUNTY HOSPITAL

Woodcock

GENERAL PLANNING ARRANGEMENTS. Doors swing into rooms from corridors; in private and semi-private rooms door should be diagonally across room from window, with head of bed at window side; beds preferably parallel with window wall, with window at patient's left; space in private and semi-private rooms for nurse's cot; in small wards beds preferably parallel with window wall; in large wards nature of plan sometimes necessitates placing of beds with backs to exterior wall, with windows between beds.

SOLARIA AND OPEN SPACES. **Solaria:** placed at each end or in center of patients' building, depending on plan; preferably on all patients' floors; sunny exposure; exterior walls with the maximum possible area of glass; windows arranged for opening; special glass permitting entry of therapeutic rays of sun; wide doors for passage of beds; preferably heated; consider possible use as overflow wards. **Covered porches:** similar to solaria except with no window sash and unheated; possible minimum of solid construction in exterior walls. **Balconies:** for private or joint use; size sufficient for beds and attendants; preferably opening from rooms but not

Woodcock

NURSES' STATION IN A TYPICAL WARD IN LOS ANGELES COUNTY HOSPITAL

projecting far enough to impair light in spaces below; cantilevered if consistent with architecture. **Open roofs:** particularly desirable in conjunction with and at same level as children's section. **Parapets:** at least 3'6" high; where used by children surround space completely with wire mesh inclosure extending at least 7'0" above roof and curving inward at top.

PATIENTS' CLOTHING. Closets or lockers in private and semi-private rooms; lockers in wards; general storage room for clothing of ward patients or of all patients.

●

CONTROL STATION. Generally one on every patients' floor, facing elevators and separated from elevator lobby by glazed partition having counter and wicket or opening; contains desk, chair and portable cabinets; sometimes combined with nurses' station when location is suitable.

NURSES' STATIONS. Generally one for every large ward or other nursing unit; in form of (a) alcoves in corridor or (b) separate rooms with glazed partitions and counter or railing; equipment includes desk, chair, medicine cupboard, dressing tray cabinet, chart rack and files, telephone, and call signals; medicine cupboard in form of dresser, with lower and upper sections, counter of stainless steel, monel, or marble on top of lower section, 10" diameter vitreous china bowl set into counter, and hot and cold water connections and drain; one portion of medicine cupboard under special key for narcotics; nurses' rest room; telephone adjacent or nearby.

EXAMINATION AND TREATMENT ROOMS. At least one on every patients' floor, except not essential where patients are in private rooms exclusively; central location; north light desirable but not essential; equipment includes examining table, utensil sterilizer, instrument sterilizer, portable instrument cabinet, and all-service sink; ceiling fixture arranged dually to give semi-indirect lighting of room or beam of light on table at option of operator.

UTILITY AND SINK ROOMS: One to each nursing unit; equipment includes work table, supply cabinets on wall with space underneath for linen hampers, gas hot plate (one or two burners), utility sink and drain board with space underneath for refuse can, warming cabinet for solutions and utensils, bedpan emptier, built in or free-standing at wall, combined bedpan washer and sterilizer, clinic slop sink, portable bedpan rack, and slate or marble shelves; floor drain; nurses' toilet and lavatory.

WORK ROOM. Combined with utility room or as an adjunct of treatment and examination room; in latter case generally contains warming and supply cabinets, drying cabinet for blankets and garments, work table, and portable refrigerator.

TREATMENT AND NURSING FACILITIES

CHILDREN'S ROOF AND PARAPET ON MEADOWBROOK HOSPITAL

Drix Duryea

MAIN KITCHEN, SHOWING STEAMER AND SOUP KETTLES, IN SYRACUSE MEMORIAL HOSPITAL

Gottscho

CLOSETS. Stretcher: one to every nursing unit; size about 3'2" x 7'0". **Linen:** one to every nursing unit; walk-in type favored; size varies with number and classification of patients; ventilation in door; metal or wood shelving and counter. **Flower:** one per floor; slate or soapstone table with built-in sink; size variable; flower closets generally not provided for wards. **Telephone:** one per floor; coin box or otherwise.

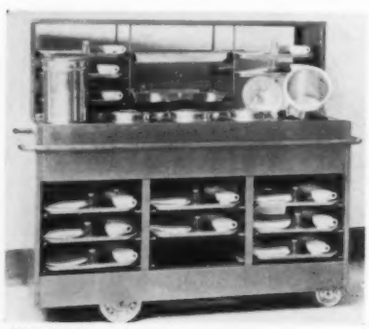
KITCHENS, DINING, AND FOOD SERVICE

MISCELLANEOUS. Drinking fountains: one on every floor, centrally located in corridor; built-in wall type favored, with diagonal stream and glass-filling faucet; lever handles; cooled water. **Clothes chutes:** one per patients' building generally sufficient; stainless or glazed metal; diameter 24" standard, 20" medium, and 18" small; material of doors and intake and outlet throats same as chute; doors equipped with rubber sealers and refrigerator-type handles; vent and perforated flushing ring at top, and drain at bottom. **Clocks:** one double-faced type in every corridor, projecting from wall or ceiling and being readable up and down corridor; controlled from master clock elsewhere in hospital; 12" diameter face for long corridors and 10" for short. **Signal systems:** doctors' paging indicators, hung from wall or ceiling and visible up and down corridor. **Nurses' call annunciators:** in nurses' stations.

TYPE OF FOOD SERVICE. Centralized or otherwise? Determination of type by consultant and administration of hospital; space for enlargement of centralized kitchen in case of expansion of hospital.

MAIN KITCHEN. Location: near entry of supplies and convenient to elevators; generally in basement; good natural light and ventilation desirable. **Main kitchen:** ranges, soup kettles, steamer, and cereal cooker, all under vent-hood having bottom edge about 7'0" above floor and fitted with lights for illumination of equipment; slight depression, with drain, in floor under kettles; cook's table, with built-in bain-marie and sink, and with overhead pan rack suspended from ceiling; cold service counter with shelf over and with ice cream cabinet and salad refrigerator adjacent; cook's refrigerator and walk-in refrigerators for (a) fruit and vegetables, (b) meat and poultry, and (c) dairy products, the walk-ins convenient to main kitchen and food preparation room; dressers for dishes, utensils and small supplies; coffee urns on cup-warming cabinet; bread rack and table; space for food carts and electric outlets for their heating; 10" clock controlled from master clock. **Dishwashing room:** dishwashing machine and tables for clean and soiled dishes; sink and drain board; this room not necessary if dishwashing is done in serving kitchens. **Scullery:** adjacent to main kitchen and separated by dwarf wall about 6'6" high; tables, pot racks, pot sinks, and can-washing sink (on floor); floor space, with drain, for washing carts. **Central diet kitchen:** adjacent to main kitchen; refrigerator; dressers; gas range with hood; cook's and work tables, and pan rack from ceiling; sinks and drain boards; mixers;

FOOD CART USED IN LOS ANGELES COUNTY HOSPITAL



Woodcock

Gottscho

MAIN KITCHEN, SHOWING RANGES, STEAM TABLE AND BUILT-IN REFRIGERATORS, IN SYRACUSE MEMORIAL HOSPITAL

portable tray racks. **Food preparation room:** adjacent to main kitchen; work tables, sinks and drain boards, butcher's block and work bench, ice cream freezer, mixer and parer. **Bakery:** refrigerator, sink and drain board, oven, pastry stove, kettle, mixer and table. **Supply rooms:** daily supplies, and general stores; convenient to kitchen, food preparation room and service entrance to building. **Dietitian's office:** located near and preferably with a view of main kitchen and central diet kitchen.

SERVING KITCHENS. One on every patients' floor, and supplemented by subserving kitchens where distance to patients' rooms is great; principal serving kitchen on each floor separated from elevators and corridor by a service lobby, with no door directly from kitchen to corridor; refrigerators, sink and drain board, dishwashing machine and tables (if not centralized in main kitchen), work table, and electric toaster and egg timer; combination steam table, warming cabinet, and gas stove with hood; space for food carts; pasteurizer on children's floor.

DINING SERVICE. Dining rooms: customary separation into staff, clerks, nurses, and help; usually located near and on same floor as main kitchen and served by the cafeteria system; areas dependent on numbers in the respective groups; visitors' dining room, if required, with type of service optional. **Cafeterias:** separate cafeteria for servants; one additional cafeteria can serve the other personnel groups; counter, with tray rail and built-in steam table; cutlery box; refrigerator; ice water fountain; sink and drain board; gas stove, and coffee urns on cup-warming cabinet, with hood; dresser; ice cream cabinet, and electric toaster and egg timer; adjoining dishwashing room, connected directly with both cafeteria and dining room, and containing dishwashing machine and dish tables.

MISCELLANEOUS ITEMS. Minimum ceiling height of 10'0" recommended; all working surfaces, such as tables and counters, of stainless metal, except where specific uses (e.g., as butcher's) require wood; 2'10" satisfactory height for tables and counters; refrigerators and cabinets preferably built in, or with room base and wall carried out to face; hoods should be mechanically ventilated to outside of building; special study of routing of food carts in kitchen; concealed ducts and piping at ceiling; grease traps on plumbing fixtures.

Woodcock

BEDSIDE STAND USED IN LOS ANGELES COUNTY HOSPITAL

OPERATING DEPARTMENT

LOCATION. Preferable to assign entire floor or one end of floor to this section; through-passage not desirable; access by elevator or corridor to all patients' floors; extent dependent on nature and size of hospital.

OPERATING ROOMS. Size: 18'0" x 18'0" average, with minimum ceiling height of 10'0"; additional space if observation galleries required. **Windows:** about 10'0"

NURSERY IN THE LOS ANGELES COUNTY HOSPITAL

Woodcock

A CONTINUOUS FLOW BATH

wide x 7'0" high and customarily divided into one large fixed sash and two smaller operating sash; glass screen about 8'0" high and width of window, incloses radiator and screens room from drafts; window in at least one operating room equipped with light-proof shades for eye, ear, nose and throat work; obscure glass. **Equipment:** operating table of type selected; built-in instrument cabinets, closed and open types with glass shelves; built-in film viewing cabinet; aspirator; instrument and dressing table; irrigator and drum stands; anaesthetist's fixtures; clock, with second ticker, etc.; plaster sink for fractures in at least one operating room. **Lighting:** wide variety of approved types for operating light, ranging from the suspended fixture on adjustable mount to the series of focusing floodlights housed in ceiling; general illumination of room by ordinary methods; emergency current from storage batteries (automatically cutting in) recommended. **Heating, etc.:** thermostatic control giving 85 degrees temperature when outside is at 10 degrees below zero; local humidifiers recommended where no general air conditioning exists; brass, of 6" x 6" squares, installed in floor over entire area and grounded as safeguard against explosions of anaesthetics from static electricity.

DOCTORS' SCRUB-UP ROOMS. Preferably connected with operating rooms, generally between two, and connecting also with operating department corridor; generally two scrub-up sinks for every operating room, with knee or foot control and mirror and glass shelf above; size of each sink usually 30" x 22" x 10" deep; built-in soap system; when no scrub-up room is provided one sink is generally placed in every operating room.

KNEE-ACTION WASH-UP SINK

STERILIZING ROOMS. Connecting with operating rooms, generally between two; clinic sink, warming cabinet, instrument sink and battery of sterilizers for water, utensils and instruments.

NURSES' WORK AND SUPPLY ROOMS. Located near operating rooms, generally across corridor; supply cabinets with shelves, drawers, counters and bins; utility sinks and drain boards; tables; warming cabinet and glove-drying rack; dressing sterilizers of cylindrical, built-in type, with access space at rear; water still; drum cabinet, and portable drum racks; these rooms generally en suite.

ANAESTHESIA ROOMS. One for every pair of operating rooms, and located near but not connected with them; size approximately 11'0" x 11'0"; brass grid in floor as for operating rooms; lavatory and supply cabinet; flat wood strip 8" inches high on all walls, with center 33" above floor, for protection of plaster against damage from stretchers; anaesthetist's fixture.

MISCELLANEOUS SPACES. Doctors' locker and dressing room, with shower, toilet, and lavatory adjoining; similar but smaller accommodations for nurses; stretcher

Gottscho

OBSTETRICAL OPERATING ROOM WITH STUDENTS' OBSERVATION GALLERY IN SYRACUSE MEMORIAL HOSPITAL

closet; public waiting rooms and toilets; recovery rooms; observation galleries, with or without glass separating screens, and entered from corridors.

CORRIDOR. Built-in instrument cabinets (with glass shelving) where desired, supplementary to or in lieu of cabinets in operating rooms; control alcove.

●

OBSTETRICAL DEPARTMENT

LOCATION. Entirely independent of operating department if maternity work is extensive; housed with operating department if maternity work is on small scale, but having independent facilities; in latter case this department often consists of a labor room, delivery room, and sterilizing room, all reached through a portion of the operating room corridor partitioned off from the remainder.

ELEMENTS. Labor and delivery rooms: about 14'0" x 17'0" in size, with minimum ceiling height of 10'0"; one designated for septic cases; scrub-up sink; private toilet. **Labor and preparation rooms:** about 13'0" x 15'0"; bed, slab bath, and lavatory in room; private toilet. **Delivery operating room:** similar to general operating room; sterilizing room adjoining; observation gallery if used in student work. **Obstetricians' dressing room:** lockers; shower, toilet, and lavatory adjoining; rest room. **Nurses' dressing room:** similar to obstetricians'. **Nurses' work room:** similar to work rooms in general operating section. **Sterilizing room:** centrally located and with equipment similar to such spaces in connection with the general operating rooms. **Other spaces:** waiting room, linen and supply closets, office and records, stretcher closet, telephone closet; nursery customarily placed in maternity section. Soundproofing customary on floors, walls, ceiling, and doors of labor rooms.

●

PSYCHOPATHIC DEPARTMENT

SCOPE AND LOCATION. Except where a special hospital is devoted to such work, this department customarily consists of a series of small bedrooms, segregated in groups, for men and women, and provided with baths, toilets, utility rooms, and nurses' station. Should be so located that rooms do not face other rooms of hospitals.

BEDROOMS. All single rooms, about 8'0" x 10'6" in size; windows of detention type with shatterproof glass, and providing panes and openings limited to 5" in one direction, inclosed radiators; lighting fixtures flush with ceiling and with shatterproof glass; door hardware flush on room side.

●

X-RAY DEPARTMENT

LOCATION. Convenient to patients' rooms and general activities of the hospital; should not be in damp locations, such as basement.

Gottscho

PHARMACY IN SYRACUSE MEMORIAL HOSPITAL

Gottscho

RADIOGRAPHY ROOM, SHOWING FILM TRANSFER BOX IN WALL, IN SYRACUSE MEMORIAL HOSPITAL

LABORATORIES AND RESEARCH

ELEMENTS. Number of rooms for each phase of the work depends on size of department. Superficial therapy; deep therapy; radiography; fluoroscopy, with light-proof shades on windows; foreign body and fractures, containing special sink with plaster trap; control booths with view of rooms through vision panels in walls; viewing room, reached directly from corridor and containing stereoscopes and electrically illuminated film-viewing cabinets with sloping fronts; dark room for film developing, entered through light-proof maze and containing developing tanks, sink, film-drying cabinet, safe lights, and light-proof pass boxes (cassettes) installed in partitions for transfer of films from X-ray rooms; barium preparation rooms, with sink and drain board; dressing booths, connected with X-ray rooms and corridor; office and records; waiting room and toilets.

INSULATION. Floors, doors and partitions (but not exterior walls) of rooms with X-ray machines should be lined with lead; ceiling insulation overhead not necessary with most types of machine; partition insulation sometimes installed in large sheets hung between two wall thicknesses, but simpler method is by use of patented lead-lined blocks having overlapping joints; barium plaster sometimes used; vision panels of special "lead glass" between control booths and X-ray rooms.

MECHANICAL. Special characteristics of current required for different machines; location of general transformer; cooled water preferable for developing tanks.

FILM STORAGE. Special vault, located in conjunction with department or elsewhere; requiring in either case at least 8" brick or concrete walls; at least 6" concrete slab over and under if rooms above or below; self-closing fire door with fusible link device; automatic sprinkler system; vent to outside air; size and other details to conform to requirements of National Board of Fire Underwriters.

•

LOCATION. Convenient to center of activities; not necessarily in patients' building, but easily accessible from it; good natural light desirable, north where possible.

SUBDIVISIONS. Bacteriology and immunology, pathology, chemistry and haematology, metabolism, and urinalysis; media preparation and work rooms; office and records; animal dissecting room; animal quarters, generally located on roof or outside of buildings, with cages, sink and floor drain.

EQUIPMENT. Refrigerators; tables with acid-proof tops, duriron bowls and drains, and outlets for compressed air, vacuum and electricity (A. C. and D. C.); chemistry tables with soapstone or similar tops, soapstone sink at end, bottle racks, drawers, cupboards, and outlets for gas, water, compressed air, vacuum and electricity; stone

Drix Duryea, Inc.

DENTISTRY DEPARTMENT, SHOWING EXTRACTION ROOM BEYOND, IN MEADOWBROOK HOSPITAL

sinks and drain boards; pegboards on walls; fume hoods of transite or other similar materials, completely open and with sliding glass doors; cabinets for supplies and equipment; autoclaves; centrifuge; water still; oven; incubators; mechanical ventilator from fume hoods to outside air.

•

OUT-PATIENTS' DEPARTMENT

LOCATION. At ground level, with direct entrance from street and connection with hospital.

CLINICAL DIVISIONS: (a) medicine, (b) surgery. Dentistry, eye-ear-nose-and-throat, obstetrics, pediatrics, neurology, dermatology, genito-urinary, genecology, orthopedics, and gastrology.

SPACES. Division into spaces customarily effected by partitions of wood or hollow metal having large areas of obscure glass and carried to ceiling or 7'6" height depending on use of space. Waiting room with ample benches and with information and control office behind railing; general treatment rooms, with tables and chairs, all-service sink, and portable instrument cabinet; private examination and treatment rooms, some with genito-urinary sinks; history rooms; dental room, with dental chairs and units as required, portable instrument cabinets, lavatory with depressions for instruments, electric instrument sterilizer, dental X-ray machine, supply cabinets, desk and chair; refraction rooms for eye work (giving 21'0" range) equipped with sink, sterilizers and instrument cabinet, and with arrangements for complete darkening; E. N. & T. room, with individual cubicles, and equipped with chairs, pedestal cuspidors, all-service sink, instrument sterilizer and cabinet; minor operating room, with treatment table, all-service sink, instrument cabinet, and battery of sterilizers for water, utensils, and instruments; dark room; office and records; toilets.

PHARMACY AND DISPENSARY. Located in conjunction with out-patients' department, yet easily accessible from remainder of hospital. **Waiting room:** out-patients' waiting room can be used when convenient, or separate waiting space provided. Pharmacy: counter, with window or wicket to waiting space; work tables and benches; storage closet; refrigerator; sink and drain board; shelving. **Pharmacy workroom:** adjacent or directly below or above pharmacy; connected by dumb-waiter if at different levels; gas stove; sinks and drain boards; work tables and benches.

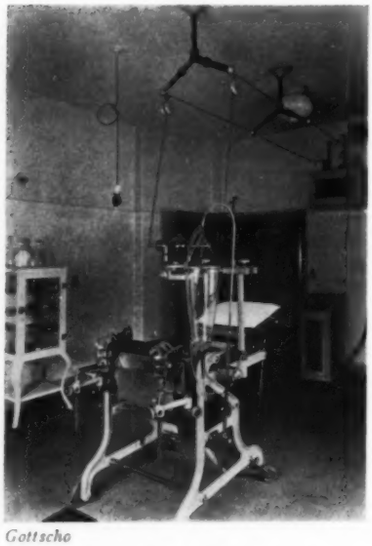
•

ADMINISTRATION

PUBLIC SPACES. General lobby and waiting room: focal point for corridors, stairs, and elevators to various parts of hospital; ample seats and pleasant atmosphere;

Gottscho

DOMESTIC SCIENCE CLASSROOM IN SYRACUSE MEMORIAL HOSPITAL



Gottscho

UROLOGY ROOM IN SYRACUSE MEMORIAL HOSPITAL

counter at information office; telephone booth; drinking fountain; public toilets nearby. **Business lobby:** usually between general waiting room and business office; check counter; bank screen with cashiers' wickets. **Reception and conference rooms:** finished and furnished equal to general waiting room, and generally adjoining that space.

OFFICES. Information, separated from general waiting room by counter, and containing telephone switchboard, doctors' paging machine, and information facilities; general business, for bookkeepers, stenographers, clerks, etc.; professional, for hospital superintendent, heads of main departments, and superintendent of nurses.

RECORD ROOMS. Active: generally in conjunction with offices. **Inactive:** can be elsewhere, but should be easily reached from offices.

SOCIAL SERVICE. Consultation rooms, offices, reading room, toilet and lavatory facilities.

ADMITTING DEPARTMENT. Ambulance entrance: remote from main entrance, and not visible from patients' rooms; marquees over entrance platform. **Entrance lobby:** large enough for circulation, wheel chair and stretcher. **Emergency room:** adjacent to ambulance entrance lobby, and equipped as a minor operating room: supply and splint cabinets, all-service sink, portable instrument cabinet, and treatment table; ceiling fixtures giving semi-indirect light for room or direct beam downward to table at option of user. **Examining room:** treatment table, portable instrument cabinet, and all-service sink; lighting fixture as in emergency room. **Sterilizing room:** in connection with emergency and examining rooms; warming cabinet, utility sink and work table; sterilizers for water, instruments and utensils. **Nurses' station:** as described under Treatment and Nursing Facilities. **Receiving wards:** preferably 2- and 3-bed wards, with toilets and admitting bath. **Utility room:** bedpan washer and sterilizer, utility and clinic sinks, table and hot plate. **Serving kitchen:** as described in section on Kitchens.

FOR STAFF DOCTORS. Locker room: lockers; adjoining toilet and lavatory. **Conference and meeting room:** provision for stereopticon lectures and motion pictures; raised platforms; portable seats; mechanical ventilation. **In-and-out board:** generally located near offices and on natural route of doctors when entering or leaving hospital.

OTHER DEPARTMENTS

•

PHYSIO-THERAPY. Hydrotherapy, requiring control table, shower, miscellaneous therapeutic baths and massage facilities; heliotherapy, natural or artificial, involving exposure to sun and use of sun lamps; office and waiting room; individual treatment cubicles.

Gottscho

A LECTURE ROOM IN SYRACUSE MEMORIAL HOSPITAL

CYSTOSCOPY. Cystoscopic table, all-service sink, electric instrument sterilizer, X-ray machine, supply and instrument cabinets; toilet; separate dark room, with work bench and developing tank, or location adjoining general X-ray dark room, with pass-box for transfer of films; lead lining in partition between cystoscopy room and dark rooms as protection for films in latter.

CARDIOGRAPHY. Portable electric cardiograph, couch, desk and chair, lavatory, portable cabinet; dark room as described for Cystoscopy Room, wiring connections to cardiograph outlets at patients' bedside.

AUTOPSY ROOM AND MORGUE. Usual location at rear of hospital and out of view of patients. **Autopsy room:** size for room with one table about 18'0" x 18'0", with minimum ceiling height of 10'0"; autopsy table, work tables, sink and drain boards, and lockers; adjoining toilet and lavatory; large window area, with obscure glass; floor drain; accommodation for work by public authorities. **Morgue:** near autopsy room; embalming tables, number dependent on character and size of hospital; slop sink at end of each table; mortuary refrigerator with individual compartments, sliding trays, and card holders on doors; refrigerator generally 7'6" from front to rear, 2'6" high per tier, and 2'8" wide per compartment, over-all sizes.

•

MISCELLANEOUS ELEMENTS

NURSES' HOME. Usually a distant building; domestic life and relaxation furthered by separation from hospital atmosphere; grounds around, with space for tennis courts and other outdoor exercise; **Bedrooms:** mostly single rooms, some double; standard size of single rooms 8'6" x 13'6", of double rooms 11'0" x 15'6"; minimum ceiling height 8'0"; closet for every nurse, about 3'0" x 3'0" and opening into bedroom; usual furniture — bed, desk, straight chair and easy chair. **Bath and toilet rooms:** private bathrooms for a few ranking nurses, and general bathrooms and toilets for others; either a lavatory in every bedroom or grouping in a general washroom; for general rooms usually 1 toilet for every 4 or 5 nurses, 1 bath tub (with shower over) for every 7 or 8 nurses, 1 separate shower stall for every 10 nurses, and, where general washrooms are adopted, 1 lavatory to every 3 nurses. **Social rooms:** general living room, usually on first floor, designed and furnished in domestic spirit and containing fireplace, built-in bookcases and the like; reception rooms, in same spirit as general living room, intended for small groups, such as family visits, and located near social center. **Recreational rooms:** spaces for dancing and noisy games usually in basement; sitting room on every bedroom floor for bridge and other quiet forms of relaxation. **Nurses' school:** opinion differs as usefulness; if adopted the training school is usually segregated in a distinct portion or wing of the nurses' home; laboratories (including domestic science), demonstration

NURSES' CAFETERIA IN SYRACUSE MEMORIAL HOSPITAL

Gottscho

rooms, class and lecture rooms, library and office. **Miscellaneous features:** Office, located at main entrance and containing information counter, nurses' in-and-out board (accessible from office and corridor or lobby side) and mail clerk; superintendent's suite, consisting of living room, bedroom, and bath; kitchenette on every bedroom floor, containing gas range, refrigerator, sink and drain board, and dresser, all conveniently combined in one piece of equipment if desired; men's coatroom and toilet, located near entrance; nurses' linen room, house linen room, sewing room, nurses' hand laundry, trunk and general storage rooms, all in basement; one or two telephone closets and clothes chute in corridor on every floor; elevator where building has two or more floors above entrance floor.

SERVANTS' BUILDING. Usually consists of bedrooms, one sitting room per floor, and general toilets and baths; bedrooms about 8'0" x 13'0", minimum ceiling height 8'0", and with or without closets; where building is divided into two parts, for men and women servants, sitting rooms and bath and toilet facilities occur in each part.

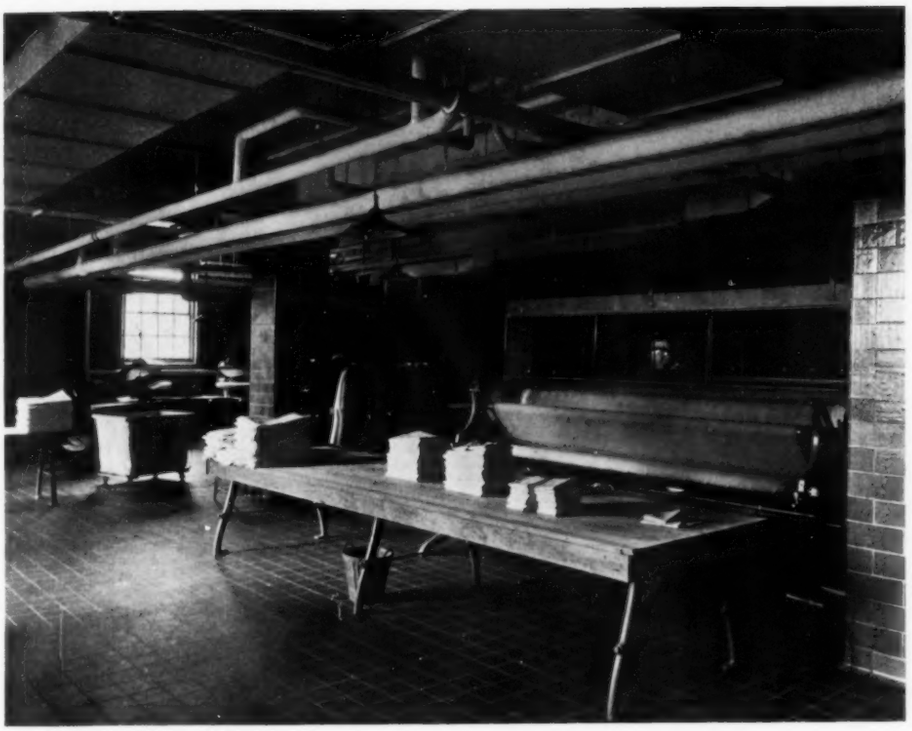
LAUNDRY. Located in basement of hospital or in separate building; good light and natural ventilation desirable; size dependent on volume and character of work; minimum ceiling height 11'0"; layout of machinery with a view to proper route of work through laundry; receiving space, washers, tumbler, extractors, steam pressers, ironing boards, flat-work ironer, tables, drying cabinets; in separate room with counters facing main laundry room—linen supply and sewing rooms, with shelving as required; skylights where possible; connection by underground passage with other buildings of group; toilets.

GARAGE. Preferably in separate, one-story building; space for ambulances and hospital cars; inside dimension from front to rear, about 23' average; laterally, car spacing 11'0" o. c. gives surrounding work space; doors 8'0" wide x 8'6" high, overhead or hinged at jamb—sliding type not practical where several occur in row; overhead washing device; work room; chauffeurs' rest room and toilet; garage for cars of staff and nurses sometimes provided.

GENERAL DATA

•

WINDOWS. Material: wood or steel, latter preferable for reasons of durability. **Sizes:** where of particular importance sizes are given in discussion of various rooms; elsewhere determined by architect's judgment as to light and appearance. **Sill heights:** approximate minimum 2'10" from floor to stool (interior); sills near floor should have guard rail on outside. **Action:** for all practical purposes double-hung windows are satisfactory, sometimes used with transom; elevated stool, permitting lower sash



Gottscho

IRONING MACHINES IN LAUNDRY OF SYRACUSE MEMORIAL HOSPITAL

to open sufficiently to give ventilation at meeting rail only; casements, projected, and pivoted sash useful in certain cases, depending on use and on character of elevation. **Glass:** 26 oz. usual practice; generally clear, except obscure in operating rooms, autopsy rooms, and in baths and toilets if desired; wire glass where stairs.

DOORS. Material: exterior doors usually wood or bronze at main entrances, dependent on character of architecture and budget, and kalamein at service entrances; interior doors generally of wood, except hollow metal customary in basements and wherever expected to receive hard use or required for fire protection; copper-covered doors usual practice on roof bulkheads and wherever no shelter from weather is afforded. **Design:** doors at exterior openings and in spaces having architectural character are usually paneled or glazed as required by the style of the building; elsewhere wood doors are of flush type and metal doors in one panel. **Sizes:** thickness usually 1¾″ for interior doors and 2″ for exterior; except where architectural design dictates otherwise doors usually from 6′8″ to 7′0″ high; width—3′10″ or 4′0″ between patients' rooms and corridors and wherever passage of beds is expected, 3′0″ to stairs, 2′6″ to closets except where pairs required, 2′8″ or 2′10″ to nurses' bedrooms, elsewhere determined by customary considerations. **Vision panels:** small panel required in every double acting door; doors to psychopathic bedrooms require observation panels about 6″ x 8″, of shatterproof glass and hinged to swing toward corridor; doors to contagious bedrooms require panels about 8″ x 12″, fixed in position and provided with solid shutter (preferably of metal) or corridor side of glass—shutter-hinged or vertical sliding; where desired certain doors have entire upper portion glazed for borrowed light in corridors. **Lead lining:** in doors which occur in lead-lined partitions (X-ray department). **Soundproofing:** in doors which occur in soundproofed partitions (obstetrical department, for example); thickness about 3″; special jambs with rubber gaskets, etc. **Finish:** practice varies; upkeep favors stained finish on wood doors and baked-on finish on hollow metal doors. **Jambs and trim:** hollow metal, combination buck, jamb and trim favored; trim flat, about 2⅛″ wide, and about ⅛″ in front of plaster, with molded wood trim applied where architectural treatment demands.

PARTITION SASH. To gain light in corridors and interior spaces; jamb and trim as for doors; material of sash generally wood for lighter weight; desirable generally for sash to hinge at bottom and swing toward rooms, with adjustable holders at sides; glass usually obscure.

CORRIDOR. Widths: in hospital building 8′0″, except 7′0″ sometimes used on children's floors; in nurses' home and servants' quarters 6′0″. For **Materials,** see discussion of that subject.

PARTITIONS FOR WARD CUBICLES

SURGEONS' SCRUB-UP ROOM IN OPERATING DEPARTMENT OF SYRACUSE MEMORIAL HOSPITAL. (NOTE KNEE-CONTROL SINKS)

Gottscho

STAIRS. Steel construction; treads of terrazzo, rubber, or linoleum; cement treads satisfactory in servants' quarters and for minor stairs; composition treads (terrazzo and cement) require mixture with abrasive aggregate; linoleum or rubber treads usually have metal nosings with abrasive insets; hand and wall rails of molded or plain wood, stained; balusters and newel posts of steel in simple pattern; minimum width of main stairs 3'8" clear; riser and tread approximately 7½" and 10" respectively; location of stairs in accordance with usual practice for adequate egress from building.

ELEVATORS. Centrally located, usually convenient to main waiting room; minimum of two needed unless hospital very small; standard inside size of car 5'0" wide x 8'0" deep; simple design preferable, sometimes with electroplated finish for durability and upkeep; self-leveling device and all safety appurtenances recommended; lever, push button, or combination control; one-car combination passenger and service, with doors at each end; rubber flooring; shaft doors either two-speed or center-opening, but in either case producing a clear opening of at least 3'10"; doors hollow metal; elevator in nurses' home may be of smaller size as required.

CLEANERS' CLOSETS. Located off corridors, usually one to every floor, or two where corridor is long; slop sink with roll rim, and protected metal covering on front roll; slate or marble shelf 12" wide and about 5'0" above floor; door 2'6" wide and opening to corridor; space on floor for buckets and cleaners' paraphernalia.

SOUNDPROOFING. Usually limited to labor and delivery rooms of obstetrical department, where floors, walls and ceilings are soundproofed, and to kitchens, dining rooms and dishwashing spaces, where soundproofing frequently is installed only at ceilings. Other spaces, where required by special conditions.

STORAGE ROOMS. Large space usually required; location as available.

MECHANICAL EQUIPMENT. See separate discussion of that subject (pages 430-436 of this issue).

FLOOR FINISHES

•

CERAMIC MOSAIC TILE. Bath, lavatory and toilet rooms; terrazzo sometimes used for these spaces.

QUARRY (PROMENADE) TILE. Kitchens and allied spaces, cafeterias, laundry, solaria, roofs and porches used by patients or staff; base of same material.

Gottscho

STERILIZING ROOM IN SYRACUSE MEMORIAL HOSPITAL

LINOLEUM. Corridors, nurses' and servants' bedrooms, X-ray department, offices, clinic, etc. Wood base in nurses' and servants' bedrooms; in other spaces 12" border of terrazzo and 6" or 8" base of same material, with cove between base and border and brass strip between linoleum and border. Linoleum strip in aisle between beds of wards.

RUBBER TILE. If preferred, for the spaces listed under linoleum, except rarely used in nurses' or servants' bedrooms; pattern of alternating squares of different colors where desired in public spaces; rubber border and base where ultra-sanitary quality of terrazzo not urgent.

CEMENT. Storage rooms and similar spaces; painted or with integral color; also in nurses' and servants' bedrooms and in many other spaces when budgetary limitations demand; border and base of same material.

WOOD. In social rooms of nurses' home, for sake of domestic atmosphere; maple for dancing.

TERRAZZO. Patients' bedrooms (including wards); laboratories; operating and anaesthesia rooms, with brass grid as described; serving kitchens, sink, utility, treatment, sterilizer, and similar rooms; border and 8" base of same material; terrazzo divided into approximately 4'0" squares by brass strips.

•

WALL FINISHES

SALT-GLAZED TILE. Kitchens and allied spaces; cafeterias; laundry; morgue; finish integral with structural material of wall; available in various sizes for laying in ashlar pattern; bottom course coved at floor; bull nose at exterior angles and cove at interior.

GLAZED TILE WAINSCOTS. Bath, toilet and wash rooms—height usually 4'0" except carried to 6'6" in shower stalls and where showers occur over tubs; operating and delivery rooms, 6'10" or 7'0"; corridors of operation and obstetrical departments, 5'0" to 7'0" as desired; sink and utility rooms, and serving kitchen, 5'0".

PLASTER. Generally throughout, from top of base or wainscot to ceiling; cement plaster in cleaners' closets; cove at intersection of wall and ceiling improves appearance somewhat but adds to cost and is overrated as a sanitary precaution.

PAINTING. All plaster surfaces customarily painted; lead and oil; lithopone; washable fabrics sometimes used, but add to cost.

A MODERN MEDICAL CENTER:
ITS MECHANICAL AND ELECTRICAL EQUIPMENT

By CLYDE R. PLACE, Consulting Engineer

In a modern medical center the electrical and mechanical facilities should be so designed as to utilize the practical results of present research and invention and also to provide for extension of facilities as a result of future research.

•

With the introduction of air conditioning and its use in both large and small installations, much valuable experience has been obtained. Design has been greatly improved, and definitely controlled atmospheric conditions can now be obtained according to any pre-set values. In fact, the application of air conditioning has become so widespread in commercial practice that it is surprising that more use of it is not made in hospitals where controlled atmospheric conditions are of major importance.

•

Research in lighting—the use of light for therapeutic purposes, the use of high frequency current, improvement in X-ray equipment, sterilizers and the like—has also resulted in the development of apparatus which is now an essential part of the equipment of hospitals. In fact, the use of electricity for special apparatus, as well as for power in connection with air conditioning and similar mechanical equipment, has increased to such an extent that standards of design for electrical feeders, generating equipment and the like have had to be changed to accommodate the increased loads. A hospital designed today must necessarily provide in its electrical generating equipment and feeders an ample reserve capacity to carry a future load which will no doubt be imposed because of the need for new electrical accessories.

•

Adequate and proper water supply, sewage disposal and refrigeration are major items in hospital design. The science of materials and the work of metallurgists, corrosion engineers, research chemists and pathologists have contributed information which is valuable to the sanitary engineer: he can now select materials which will last for the life of the structure, he can treat the water to assure its purity, and he can dispose of sewage without danger to the hospital or without polluting neighboring property.

•

Air conditioning has practically forced the invention and use of refrigeration machines using a non-toxic refrigerant. Hazards which have been imposed on many hospitals owing to the use of ammonia are no longer necessary.

•

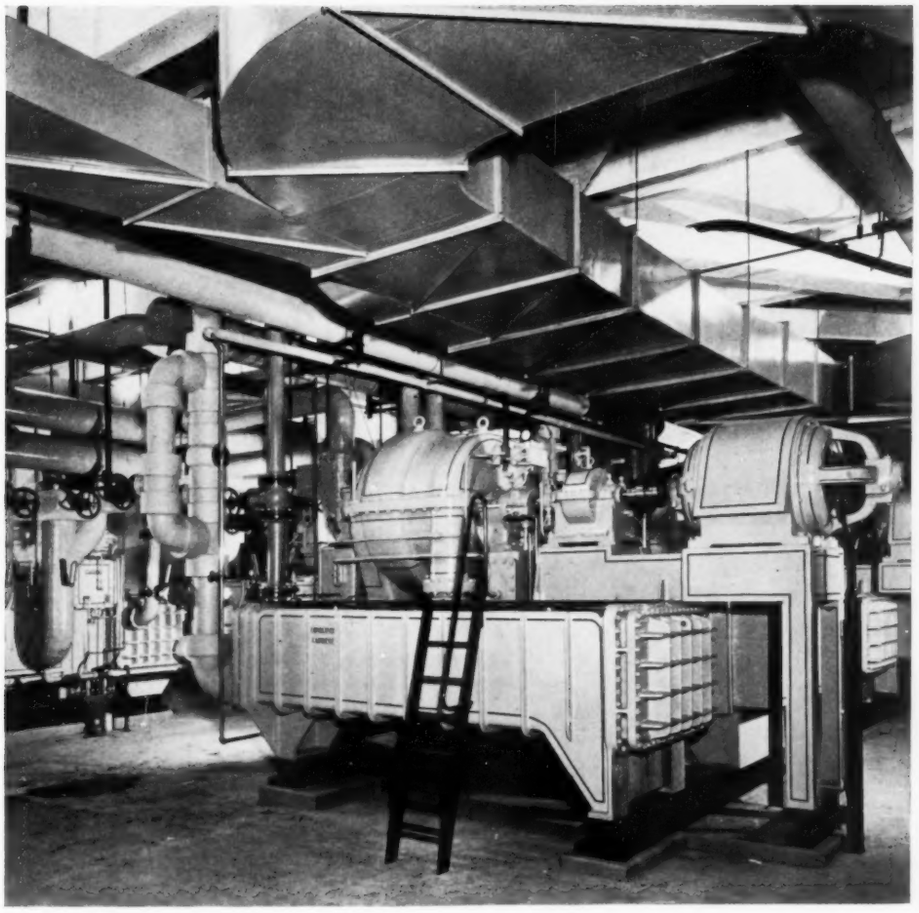
Another hazard—fire—can also be obviated by a combination of practical structural and mechanical design. Fire detecting apparatus, absolute electrical control of watchmen, automatic sprinklers and alarms, automatical chemical extinguishers and similar recent inventions can be applied with judgment to eliminate this hazard entirely.

•

The modern skyscraper has forced the development of the elevator. Micro-leveling photo-electric devices and, above all, greater speed have simplified the problem of vertical transportation.

•

That more attention is being given to sound levels is apparent in all mechanical design. The demands for quiet have been met by engineers and practically all unnecessary and uncontrolled vibrations can be removed from the mechanical equipment and the building structure.



Centrifugal-type refrigeration machines using a non-toxic refrigerant in conjunction with air conditioning.

AIR CONDITIONING

Air conditioning in hospitals has many important applications. For example, using proper washing, dehumidifying and control apparatus, it is possible to provide clean, pollen-free air and to maintain the same temperature and humidity conditions as prevail at Saranac, which has become famous as a health resort for tuberculosis patients. Recently developed ionizing equipment makes possible a supply of air of ionic content similar to that of country air with its vitalizing effect.

If the medical staff of a hospital should establish the humidity and temperature requirements for each section of the medical center, the designing engineer can obtain and maintain the designed conditions within close limits. It is possible to design a good tuberculosis sanitarium in the heart of New York City.

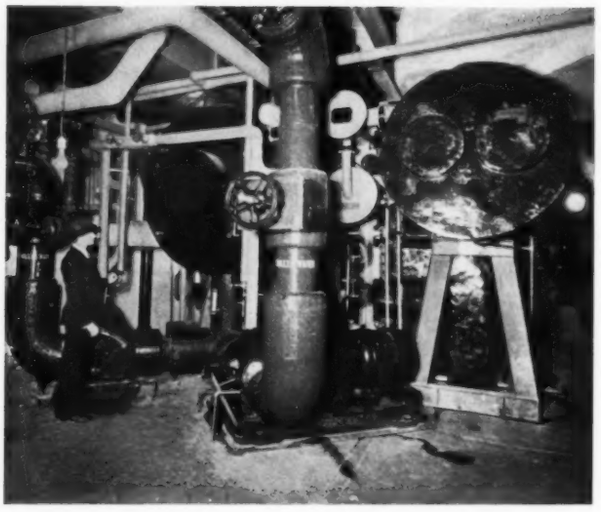
At the present time surgeons while performing their difficult duties are subjected to an additional physical strain because of atmospheric conditions in the operating and delivery rooms. High-power lamps which radiate heat, wet towels, sterilizers and the like contribute to the temperature and humidity in rooms where there is poor ventilation, and create atmospheric and static electric conditions which are not suitable for doctors performing difficult surgery work and are hazardous to the patient. Even simple air conditioning would not be satisfactory, although it would be an improvement.

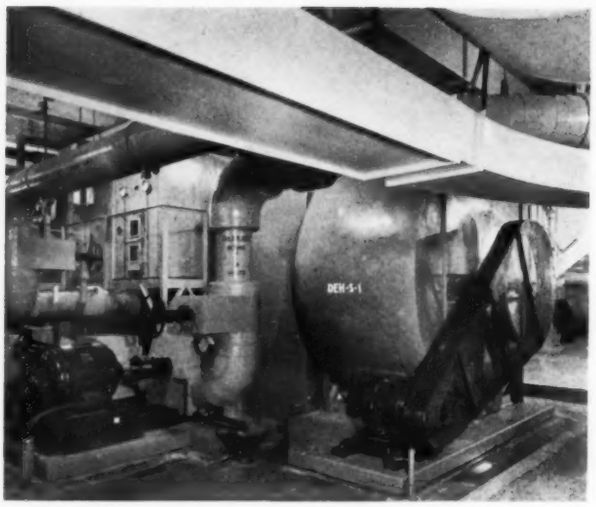
Rooms of this type require special air conditioning installations. Flexibility of control to make automatic adjustments to rapidly changing conditions, absolute purity of air, the absence of perceptible air motion, absolute control of temperature and humidity, and removal of noxious gases and odors are all necessary adjuncts which can and should be incorporated in the design.

Proper air conditioning requires a refrigeration plant. The ammonia or carbon dioxide plants have been supplemented by two new general types of equipment. One type uses a non-toxic refrigerant such as freon in either low-pressure centrifugal compressors or low-pressure reciprocating machines. A second general type uses steam in conjunction with jets or exhausters.

Every refrigeration plant requires an ample supply of condensing water. If the hospital is located near a stream or river the problem is reduced to one of pumping. If, however, the hospital is located away from a stream, it is necessary for the engineer to figure definitely whether the economic solution is the purchase of a supply of water from a public water system or the installation of cooling towers or spray ponds.

Here again progress has been made. The old cooling towers and spray ponds are being replaced by evaporating chambers, fully inclosed, quiet in operation and having a higher efficiency.





Brown Brothers

(Left) Steam jet refrigeration machines for use in conjunction with air conditioning. (Right) Dehumidifier used for washing air and maintaining temperature and humidity conditions.

HEATING AND VENTILATING

The general requirements for heating in hospitals are temperature regulation and cleanliness.

Radiators which have a proclivity for collecting dust and which are difficult to clean are not practical for use in hospital heating. The old fashioned cast-iron radiator, with minor modifications to improve its appearance and to obtain simplicity in cleaning, will be difficult to replace.

Control of heat emission for the radiator offers the engineer an opportunity to use excellent control equipment of either the pneumatic or electrical type. The nurse or doctor can establish the desirable room temperature, both day or night, for any particular room and this temperature can be maintained within a fraction of a degree. Temperature variations can be obtained by the simple manipulation of a thermostat in the room.

Special heating requirements for hospitals generally vary with the type of institution. Radiant panel heating can be successfully used where it is necessary to keep patients warm yet maintain the temperature of the room the same as outdoors. This method of heating would be particularly applicable to tuberculosis sanitariums.

Where violently insane patients are isolated, special provisions must be made for absolutely safe heating equipment. Concealed panel heating circulating hot water through coils in the walls is an excellent solution.

The heating of operating and delivery rooms must be considered as a special problem. Wide variations in temperature which must be obtained within a few minutes time and maintained within close limits require special heating lines, apparatus and control.

Adequate ventilation of laundries, toilets, service and machinery rooms is essential to the health of the hospital employees as well as the patients served by them.

Rapid removal of cooking odors, exhausting smoke and grease vapor from ranges and the introduction of clean fresh air is necessary for a sanitary hospital kitchen.

In conjunction with heating and ventilating, the design must be handled very carefully where air conditioning is involved so that interference in control and operation is not obtained. This correct correlation of the phases of mechanical design requires careful study by technical and practical engineers.

ELECTRICAL EQUIPMENT

The modern medical center has a definite use for practically every type of electrical equipment. In this equipment electricity is used in most of its forms, namely, high and low frequency, high and low voltage, direct and alternating current. Radios, X-rays, therapeutics, lights, heaters, annunciators—all set up special requirements and standards.

Aside from the general power distribution there must be provided a dependable and efficient annunciator call system for nurses, a first class watchman's and fire alarm system, and power for cooking and sterilizing, X-ray and utility rooms.

The operating and delivery rooms must be provided with automatic stand-by electrical power equipment so that failures in the general system will not interfere with the work of the surgeons.

Special light fixtures in corridors and bedrooms require careful design both of the fixture itself and its location so that sleeping patients will not be disturbed at night. The design and installation of lights for the operating room requires the greatest care and skill, and can only be done properly by a qualified electrical engineer working in conjunction with the surgeon and the equipment specialist.

An electrical clock system placing all clocks in the building under an accurate master control is important. Clocks in special rooms should be provided with second hands for the convenience of doctors and nurses.

The importance of obtaining quick communication with individual doctors as they make their rounds through the hospital can not be denied. This can be done by an electric annunciator call system directly controlled from the telephone operator's desk.

In conjunction with the doctors' call system the hospital should be provided with an electrical register system which the doctor operates to indicate when he arrives at the hospital and when he departs.

Cleaning in the hospital can be simplified by electric outlets in halls for scrubbing, waxing and vacuum cleaning machines.

FIRE PROTECTION

Fire protection can be divided into three essential phases, namely, prevention, detection and extinguishing. (Although structural requirements and the "human elements" enter into all phases, discussion is limited to that which concerns the mechanical or electrical engineer.)

Proper design of electrical work, conduit, fused protection, use of automatic extinguishers and a carefully routed and controlled watchman's system contribute to the prevention of fires.

Detection of incipient fires before they have reached major proportions is important. There are several positive systems using either the "rate of rise" or thermostatic principles which can be adapted to use in hospitals. Fires can be automatically detected, definitely located and quickly extinguished or isolated.

For extinguishing, the potency of a stream of water under pressure is important. In hospitals over five stories in height, the internal fire protection system must be carefully designed and installed. The complete standpipe system with its storage tanks, pumps, nozzles, hose, valves and siamese, should be constructed of the finest materials, and arranged for frequent testing.

Special hazards such as X-ray film storage vaults, trucking spaces, storage spaces, paint and carpenter shops and similar utility spaces should be protected by automatic sprinkler systems of the type best suited to the particular hazard.

In addition to the standpipe and automatic system it is advisable to locate portable extinguishers in easily accessible places for the use of nurses, doctors or watchmen. Essential to the quick extinguishing of a fire is the time element which is diminished in proportion as the extinguishing medium is made quickly accessible.

SANITATION

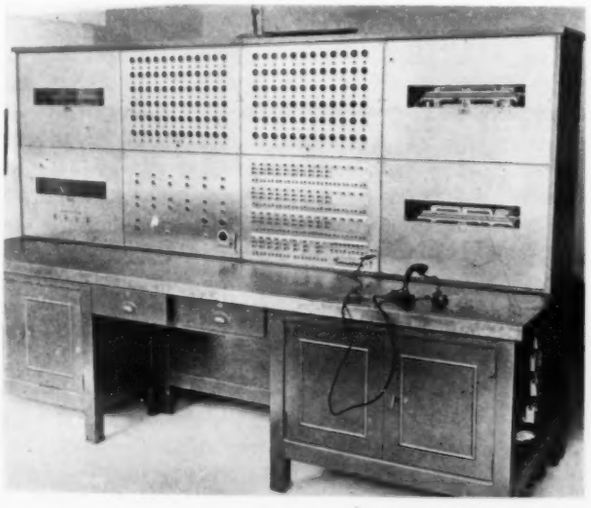
The sanitary systems in a hospital consist essentially of the water systems (hot, cold and drinking), drainage systems for sewerage and storm water, and compressed air and vacuum lines for cleaning and laboratory purposes.

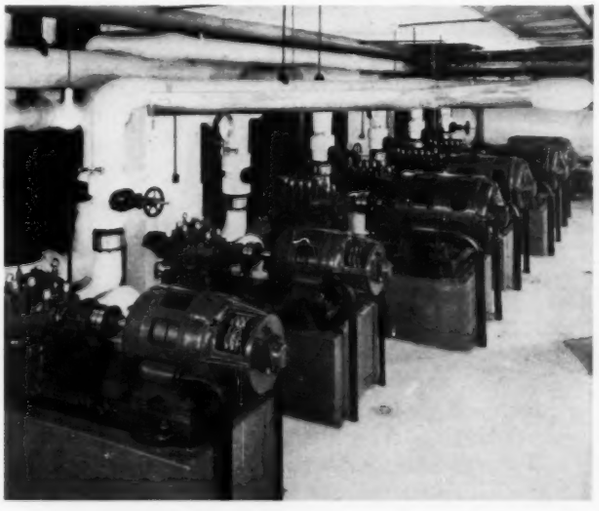
The engineer's obligation is to provide an unfailing and adequate supply of pure water. Recourse may be made to use of large storage capacities, wells, water treatment or filtration to assure proper supply and quality. However, even after the quality and quantity of water supply is definitely assured, great care must be taken in the design of a proper distribution system.

Fluctuating pressures may cause scalding of patients; improper connections to fixtures may cause back syphonage and pollution of water; and incorrect selection of materials may cause discoloration of the water and metallic contamination. Even with the use of nonferrous metals it is possible to obtain metallic contamination in such quantities as to cause the water to become toxic.

Even in ordinary buildings the use of properly designed plumbing fixtures is important. When considering hospitals the importance of fixture design becomes greater by virtue of the fact that hospitals, due

(Left) Central control desk for watchman, fire alarm, elevator and maintenance department telephone systems. (Right) Electric-driven house pumps for maintaining an adequate water supply for fire and domestic purposes. Note large storage tank in background.





to the nature of occupancy, must be considered extraordinary as regards sanitation. The use of the hands for the manipulation of faucets, wastes and flushometer valves is one of the most positive means for germ transmission that could be devised. This hazard can be eliminated by substituting for hand-operated equipment various devices which obtain the same results but which are operated by the foot, knee or elbow.

The removal of waste materials and water from the fixtures involves several important considerations. Any direct connection between the water supply and the drainage system may cause contamination. Although this may at first sight appear obvious, it is also obvious that in numerous hospitals this condition prevails at the water closets. When the closet bowl is full to the top as in the case of a stoppage, then everything is set for syphonage of water from the bowl into the plumbing system. The use of anti-syphon devices is becoming popular but does not represent the complete solution to the problem which is dependent on both fixture design as well as the design of the water system.

Sanitation in the kitchen requires equipment for cleaning purposes. Ample supply of both hot and cold water, drains and sill cocks for flushing floors, garbage refrigerators and can washers are mechanical devices which contribute to the maintenance of proper sanitary conditions.

The use of water for hydrotherapeutic treatments involves many special fixtures and connections. The continuous flow both for sedative and curative purposes is one of the types more generally known. Other devices such as control tables for jet applications, special showers and light cabinets are also used in the hydrotherapy department of a hospital.

ELEVATORS

Hospital elevators should incorporate the features which have marked the progress of design of elevators for use in modern office buildings. In addition there are special requirements such as large cars for handling stretcher cases, special automatic push button elevators for Nurses' Homes or places where the service is not constant enough to warrant an operator.

The use of automatic leveling elevators, especially for stretcher cases, is good practice since smooth rolling of the carriage is guaranteed. Smooth and uniform acceleration and deceleration contribute to the comfort of travel and may even in severe cases eliminate complications.

Noise in elevator operation can now be eliminated by proper design. Selection of machinery, sound isolation, treatment of machine rooms, floating of motor generator sets on flexible foundations, special door design, special design of cabs, and "streamlining" of shafts and cars contribute to the solution of this problem.

POWER PLANTS FOR HOSPITALS

Constant unfailing supplies of steam and electricity are required in structures of all types. In none of the general building types, however, do these requirements reach the absolute importance that they do in the case of hospitals. In the latter case, a failure of steam or electricity introduces a definite hazard, which must be removed from the realm of probability.

In addition to this question of constant supplies, other considerations are involved, such as costs of obtaining the services from various sources, freedom from labor troubles, availability of fuel supply under all conditions, reliability of sufficient steam pressure, and the like.

In the majority of cases the construction of a steam and electrical generating plant will be the outcome of the preliminary studies. The next step will be to determine the type of plant as regards both the production of steam and the generation of electricity. Too much emphasis cannot be placed on the fact that every proposed structure must be considered as an individual problem and that detailed studies must be made of every phase of the proposed plant. Precedent cannot be safely followed as the combinations of steam and electrical loads vary in every case, causing variations in the "heat balance" of the plant and requiring differing combinations of equipment for the most economical operation.

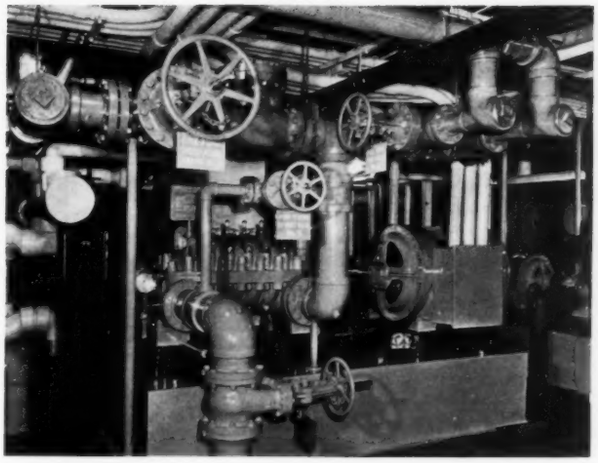
(No attempt is made here to discuss the many highly technical considerations constantly in the mind of the engineer. The sole purpose of this discussion is to acquaint the reader with the varied problems encountered in making the preliminary studies for selection of sources of power and selection of equipment.)

Before any such selections can be made, close estimates must be made of the maximum use of steam and electricity and the average use over a period of one year. Allowances must be made for future additions or extensions and future additional equipment. The maximum demands thus figured must be used in selecting the size of the steam and electrical services or of the generating equipment.

Hospitals in many cities have as one alternative the purchase of all steam requirements. Whether or not such purchase is to be seriously considered depends in large part on the company offering the sale. In the majority of such cases the company would be a public utility, under the control of a Public Service Commission. When the facilities of such a company are adequate and past performance indicates uninterrupted service, the question of continuity of service is easily answered. Where the company offering steam for sale is a neighboring building or manufacturing plant, the purchase of steam must be carefully studied from every point.

The pressure of steam entering the building is another important factor, especially where steam sterilizers are used. It is of even greater importance if steam engines are to be used in conjunction with generators for the production of electricity. The only positive assurance of a constant pressure of steam supply is an engineering survey of the plant and distributing system and the experiences of other building owners using the same source of steam located in the same neighborhood. If the examination indicates a first class plant and the experience of those owners is satisfactory, the effect on the steam pressure of additions to the steam distribution system must be gauged. The prospective consumer is, however, more or less dependent on the steam company in this respect.

The cost of purchasing steam as compared to genera-



(Left) Elevator machines for handling passenger cars traveling at the rate of 1,400 feet a minute. (Right) Electric-driven fire pump for maintaining an adequate water supply for fire standpipes.

tion can be determined only by accurately estimating the annual requirements and computing the probable cost under each plan. The installation of an electric generating plant and the use of exhaust steam for heating and other low-pressure requirements is also generally considered in computing the desired costs.

The selection of the source of electricity brings into question again the continuity of supply. A constant supply is virtually an assured fact owing to the large number of customers generally served by such power companies and the resulting multiplicity of equipment installed in the generating plants.

A minimum variation of voltage is of importance only from a maintenance standpoint.

The cost of purchasing electricity as compared to generation must be estimated as in the case of steam. More variations are involved, however, as the costs of generation with various types of prime movers must be computed in order to determine the most economical method.

If it is found advisable to purchase both steam and electricity, the sole remaining problem is to select the most advantageous schedules of rates and to determine the adequacy of existing street mains. This latter consideration applies more to the purchase of steam, in which case it is always the best policy to be sure that the steam will be supplied from more than one station and that the mains are "looped" in such a way as to assure constant service even with failure of one main. It will generally not be possible to have changes made if the existing equipment is not adequate, except in the case of particularly large buildings or a group of buildings.

If a decision has been reached to generate the steam, a selection of the general types of equipment must be made. First, and most important of all, is the selection of the fuel to be used. Generally speaking, the location of the building geographically will determine the cost and availability of the various types of fuels. For example, a hospital located near the mining districts would most logically use coal. On the other hand, a hospital located in a large city such as New York may use either coal or oil, depending on the cost per million B.t.u.'s delivered and prepared if necessary at the plant. In either case, the assurance of delivery of a sufficient quantity of fuel under all weather conditions is of utmost importance.

In some instances the fuel selection may be dictated to some extent by the facilities provided for storage. In urban communities, for example, where land costs are high, it would conceivably be cheaper to install oil storage tanks beneath driveways or courtyards than to provide the necessary coal storage space in the basement of the building or on an adjoining lot. In suburban or rural districts, however, outside storage of coal may be feasible, as also would be the use of oil tanks either buried or above ground; the storage problems would then be of minor importance.

If coal is to be used, whether it should be anthracite, bituminous or a mixture of the two will depend entirely on the relative costs per unit of steam output at the boiler nozzle and on the availability of supply. Generally speaking, it will be more economical to use automatically controlled stokers, the type (underfeed, overfed, chain grate, etc.) depending on the adaptability of the various types to burning the coal used. Pulverized coal will not be considered except in the case of very large plants, as the installation cost of equipment and the cost of coal preparation would be prohibitive in small or medium-sized plants.

When oil is the fuel selected, it will be found best to use the heaviest suitable grade obtainable, assuming of course, an operating staff competent to handle the heavier oils. Recent developments in oil-burning equipment have made possible the burning of No. 6 oil under low-pressure boilers, and the higher heat value per pound of oil, together with the lower costs, make the use of heavy oil desirable.

Regardless of the type of fuel selected, great care must be taken to provide adequate storage space,

sufficient to permit continuous operation of the plant under maximum load during short periods of severe weather when deliveries of fuel may be temporarily curtailed.

Aside from the characteristics of the current to be generated, the major problem in the design of an electric generating plant is the selection of the prime movers. If steam is generated the most suitable equipment would be turbines or engines, for by this method the exhaust steam is used for heating the building at a very low cost.

The most accurate method of determining the equipment to be used consists of making a series of "heat balances." These indicate the quantities of steam used for all purposes under varying load conditions, thus showing how much exhaust steam may be utilized and how much wasted if condensers are not used. Inasmuch as the different types of steam-driven prime movers require different quantities of steam for the production of the same quantity of electricity, it may be seen that the loads existent in different buildings may not permit the economical use of the same types of equipment.

Where large quantities of steam are required at pressures lower than that supplied by the boilers, as for sterilizers, laundries, kitchens and the like, "bleeder" type turbines may be used to advantage. Turbines of this type discharge steam at more than one pressure, useful work being extracted from the steam in the reduction of pressure.

"Mixed pressure" type turbines may be advantageously used in cases where the demand for exhaust steam is very low during certain times of the year. These turbines use a combination of low and high-pressure steam, the quantity of high-pressure steam being automatically regulated in accordance with the available supply of low-pressure steam. When a mixed-pressure turbine is to be used, a high-pressure turbine should be installed to carry a portion of the load, the exhaust from this unit being used in part by the mixed-pressure unit and in part for heating.

The selection of reciprocating engines would be made on the basis of a heat balance as already described. For smaller plants, however, turbines would not generally be used and the selection of the engines would normally be made. If a large quantity of exhaust steam is required, four-valve engines would be used. If the exhaust steam requirements are smaller, uniflow engines might be used. In the latter instance, it would be necessary to balance the additional cost of uniflow engines against the greater economy obtained by their use before a definite decision can be reached.

Whether turbines or engines are used, the use of condensing units must be considered very carefully. When the exhaust steam requirements are very light during summer months and the cost of water is low, a condensing unit may be used, and a considerable increase in economy obtained. It may be found that the savings in operating costs due to the use of condensers will not compensate for the higher first cost of the plant. Again, a cost study must be made to determine the course of procedure.

Diesel engines driving generators will generally not be used if a high-pressure steam generating plant is installed or if steam can be economically purchased at a high, constant pressure. When low-pressure boilers are already installed and the cost of altering them for high-pressure use would be prohibitive, Diesel engines may be used. The use of Diesels in conjunction with steam turbines or engines may also be of advantage for handling night loads, exceptional peak loads or emergency use.

The installation of stand-by equipment is essential to a continued supply of steam and electricity. Additional boiler capacity is the general rule as regards the steam service. Ordinarily, at least one spare boiler is provided so that under all conditions steam may be furnished for generation of electricity and other uses.

The question of stand-by electrical generating units is of far greater importance than is that of spare boilers. A hospital may manage to continue operations for a short time without steam, but not without electricity. For this reason, emergency systems are installed for lighting of exits, operating rooms and other vital parts of the building.

Spare generators and other auxiliaries are installed in case of breakdown of one of the main units, but these are connected to the main system. The source of power for the emergency system may be an entirely separate Diesel or gasoline engine-driven generator, storage batteries or a "breakdown" service purchased from a power company.

When a separate generating unit is installed in connection with the emergency system, such a unit should be so arranged as automatically to start operation with failure of the main system. A very rigid schedule of inspection must be maintained to be sure that the unit is always in proper operating condition and regular periodic running tests must be made of the complete emergency system.

If storage batteries are used they must automatically be kept fully charged at all times. If the electrical system is of the alternating current type a motor-generator set or rectifiers must be used both for charging the batteries and for transforming the current for use. Obviously, a direct current system would not require a motor-generator set or rectifiers. In either case, an automatic switch must be used to put the emergency system into operation.

Probably the best source of current for emergency use is a power company. Under most contracts for breakdown service the consumer is entitled to use an amount of electricity equivalent to the contract cost. If the purchased service is sufficiently large, the additional current may be used during early morning hours when the electrical load is small or during such periods as the main generating units are shut down for repairs or maintenance. As in the other cases cited, an automatic switch must be used to put the emergency system into service immediately upon failure of the main system.

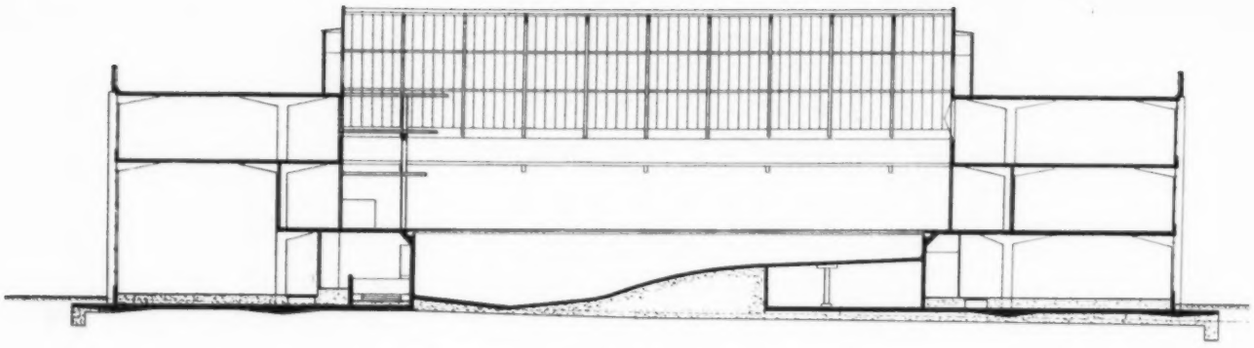
As mentioned before, it is not possible to give a standard procedure to be followed in the selection of the source of steam and electricity or the selection of equipment if a generating plant is decided upon for any particular building. As a general rule, however, it will be found that a steam and electrical generating plant will be most adaptable to hospital buildings. A review of existing hospitals, both new and old will indicate the trend in this respect.

Photograph © The Architects' Journal

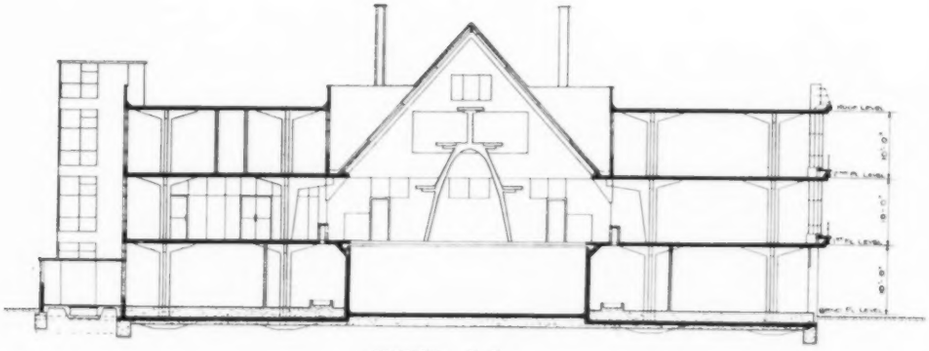
FRONT ELEVATION SHOWING COVERED PLAYGROUND FOR CHILDREN

HEALTH CENTERS:

THE PIONEER HEALTH CENTRE ST. MARY'S ROAD, PECKHAM, LONDON DESIGNED BY SIR OWEN WILLIAMS

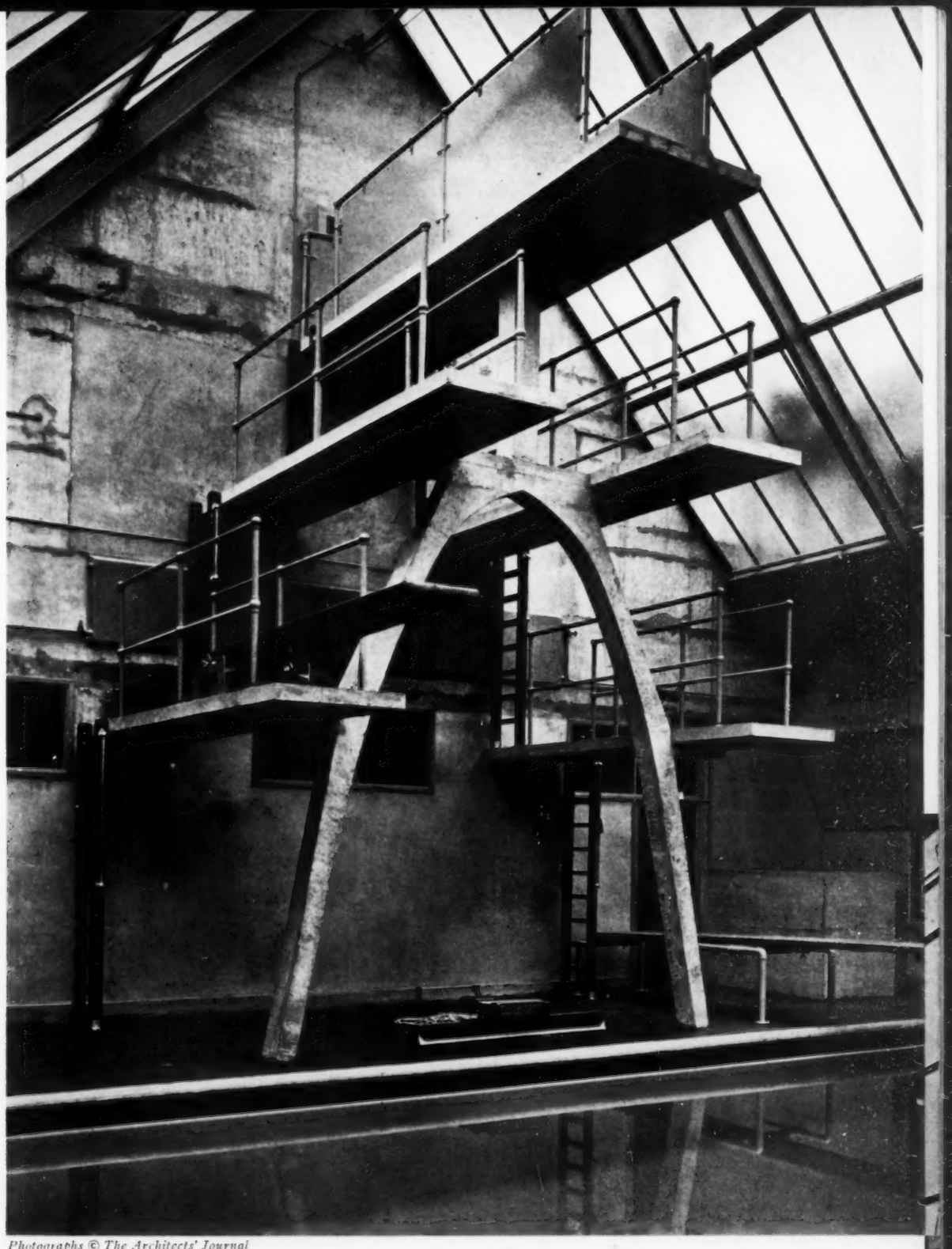


SECTION A-A



SECTION B-B

GLASS PANELS PERMIT SWIMMING POOL TO BE SEEN FROM LOUNGE AND CAFETERIA

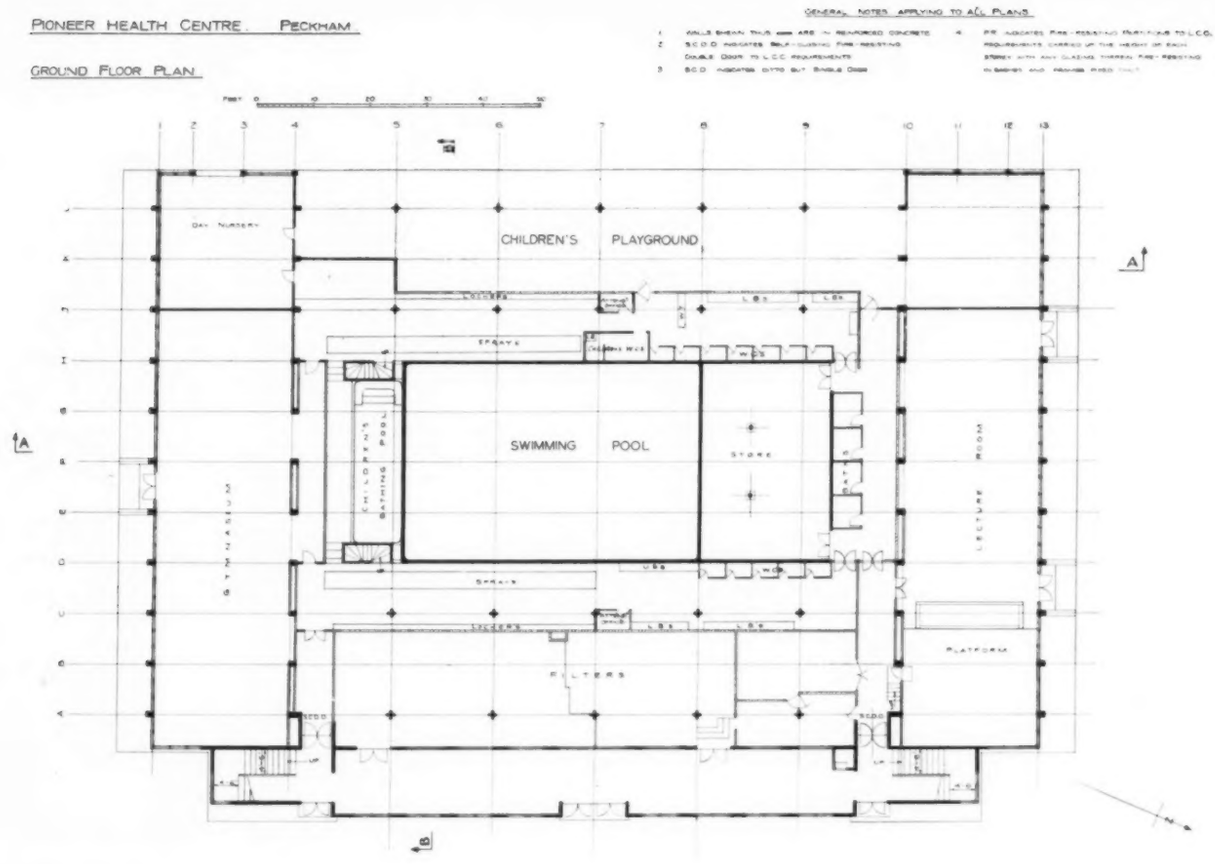


Photographs © The Architects' Journal

REINFORCED CONCRETE DIVING STAGE AT END OF SWIMMING POOL

PIONEER HEALTH CENTRE AT PECKHAM, LONDON

DESIGNED BY SIR OWEN WILLIAMS, ARCHITECT AND ENGINEER



PIONEER HEALTH CENTRE AT PECKHAM, LONDON

DESIGNED BY SIR OWEN WILLIAMS, ARCHITECT AND ENGINEER

The Pioneer Health Centre has been built to house activities for maintaining health as described in a book, "The Case for Action," by Dr. Innes H. Pearse and Dr. G. W. Scott Williamson. Briefly, the book postulates that a community should take care of health before it is broken down rather than deal with it in hospitals afterwards.

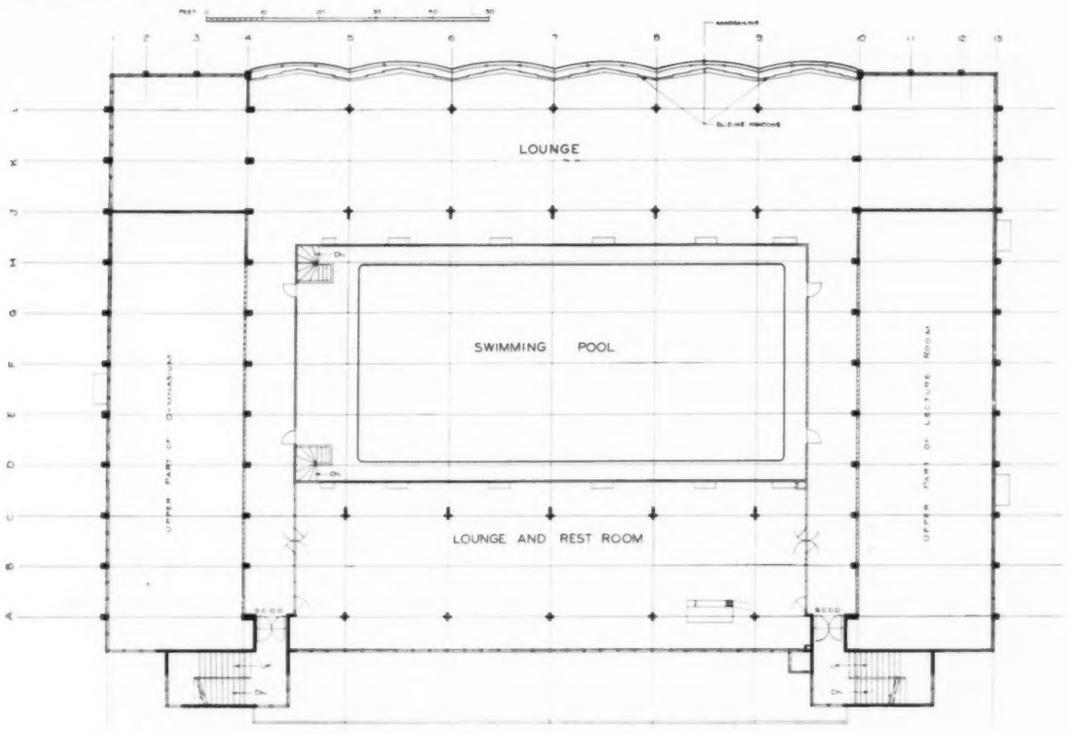
The building is 157 by 114 feet with a swimming pool occupying a central rectangular space 90 by 42 feet. Entering from the garden surrounding the building is the gymnasium. Leading from the gymnasium are the spray baths on the way to the swimming pool, and beyond is a theater or lecture hall. Off the garden there is also a covered children's playground 130 by 21 feet and a children's nursery 24 feet square. Off the playground is a children's swimming pool 29 by 8½ feet in which the depth of water can be varied up to 3 feet.

On the ground floor is the main entrance hall with accommodation for perambulators. Two staircases give access to the first and second floors and roof. The swimming pool is at the first floor, the depth of the bath (maximum 10'9") being accommodated between ground and first floors. The swimming pool has a diving stage with a high dive of 21 feet. On each side of the swimming pool, and separated by glass screens, are (1) a lounge (108 by 30 feet) in the front of the building, and (2) a cafeteria restaurant (90 by 18 feet) with kitchens at the back of the garden. From the lounge the theater and gymnasium can be viewed. Sliding windows give a completely open outlook in fine weather.

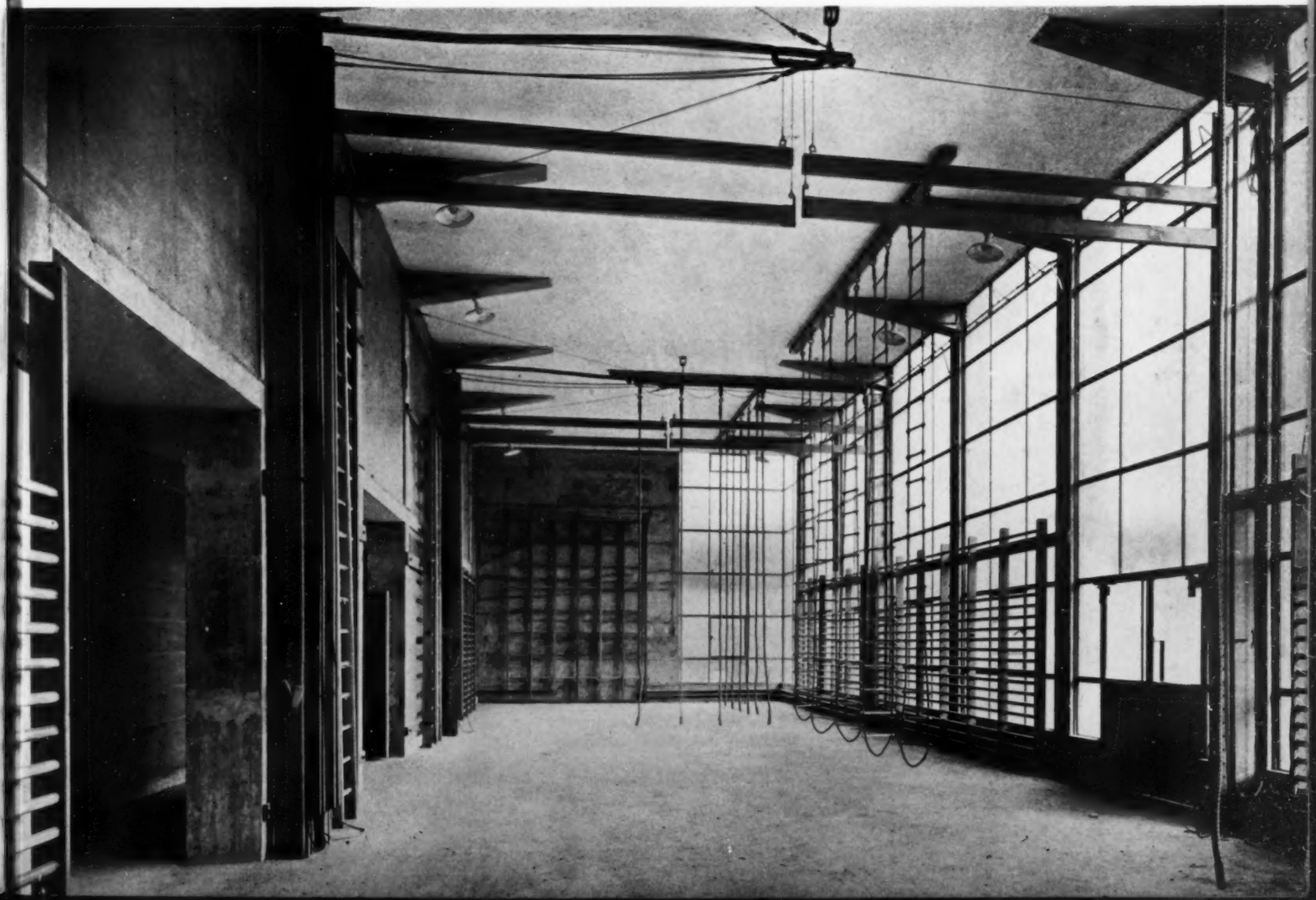
On the top floor are (1) a mental rest room, (2) a physical rest room, (3) a library, and (4) complete medical quarters for periodical examination of members by resident doctors. The flat roof is to be used for a garden.

PIONEER HEALTH CENTRE PECKHAM

FIRST FLOOR PLAN

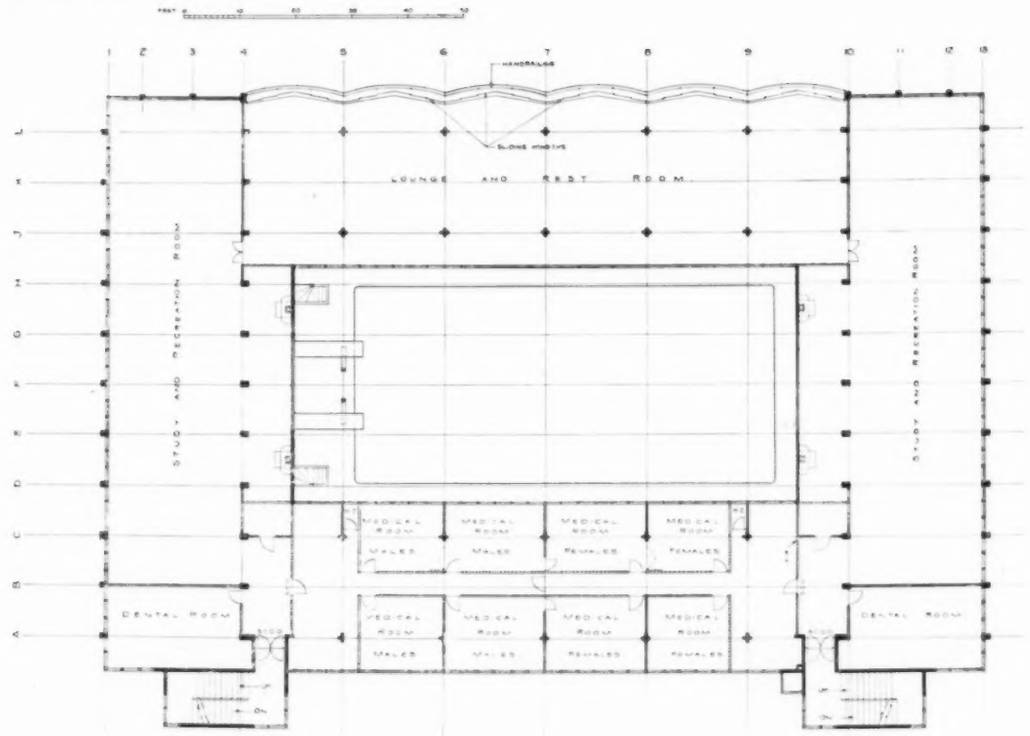


GYMNASIUM AT GROUND FLOOR LEVEL — GLAZED DOOR ON RIGHT GIVES ACCESS TO GARDEN



PIONEER HEALTH CENTRE PECKHAM

SECOND FLOOR PLAN



LIBRARY AND REST ROOM ON SECOND FLOOR

Photographs © The Architects' Journal

RECREATION AND REST ROOM ON SECOND FLOOR

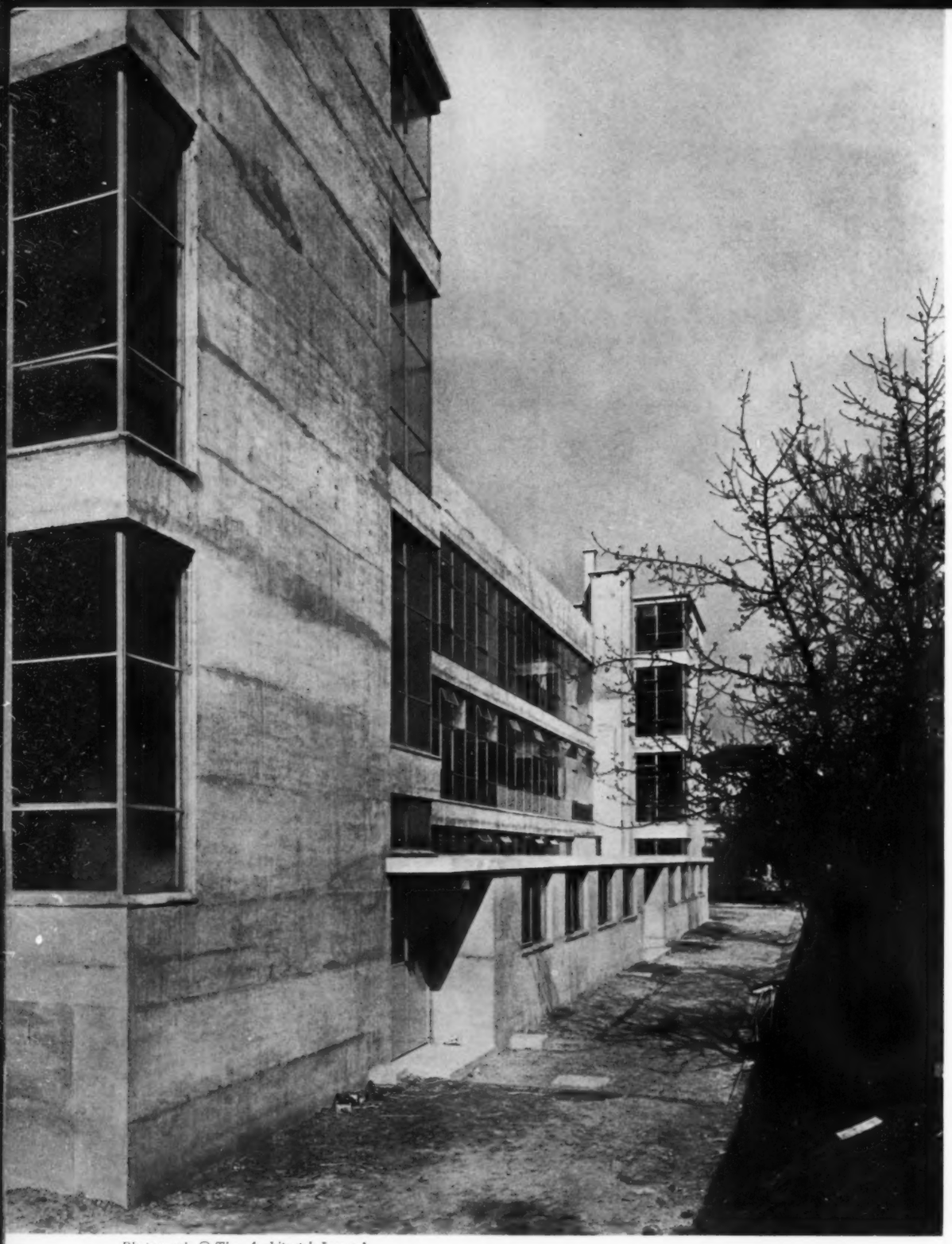
The building is of reinforced concrete and flat slab construction. In the front and back parts the spans are 18 feet with 6-foot cantilevers, the freedom from columns on elevations giving unobstructed balconies. In the theater and gymnasium the spans are 24 feet. In all cases the floor slab is 6 inches thick. The underside of the concrete flooring is covered with cork slabs 1 inch thick giving good insulating and acoustic properties. The swimming pool is of reinforced concrete with a reinforced concrete diving stage. The roof of the swimming pool is almost entirely glass. The floor surfacing is generally cork and the walls have been "papered" with cork sheet $1/8$" thick.

The heating of the building is by electricity which can be purchased economically at the off-peak period at night and used to heat water. The hot water is circulated from the storage tanks through pipes and radiators throughout the building. The same arrangement also serves the hot water supply and heating of the swimming pool.

The swimming pool, theater, gymnasium and cafeteria are supplied mechanically with conditioned air at the correct temperature. The swimming pool water is filtered and purified every $3\frac{1}{2}$ hours on the chloramine process.

The illumination is electric with emergency gas points.

Where paint is used its color is generally functional, i.e., particular colors defining particular purposes. Doors not to be used are vermilion, doors to be used are orange, and so forth.
The windows (which form two-thirds of the exterior walls) have metal frames.



Photograph © The Architects' Journal

REAR ELEVATION SHOWING STAIRCASE TOWERS AT CORNERS OF BUILDING

PIONEER HEALTH CENTRE AT PECKHAM, LONDON

DESIGNED BY SIR OWEN WILLIAMS, ARCHITECT AND ENGINEER

UNIFIED HEALTH AND WELFARE CENTERS OF LOS ANGELES COUNTY, CALIFORNIA

The system of administration developed by J. L. Pomeroy, M.D., health officer of Los Angeles County, California, since his appointment in 1915 represents both a modern conception of the unified health and welfare center with subsidiary district centers, and a successful solution of the problem of adapting this conception to American local political organization. It accepts the county as the smallest unit of public health administration in order to promote control of water supply, milk and foods, the disposal of garbage and other factors bearing on the spread of communicable diseases; and presents two main features of organization, namely (1) decentralization of operations and (2) coordination of the health and welfare work of cities, school districts and the county.

At the time of his appointment Dr. Pomeroy was the sole employee in the Los Angeles County health department. The work of the health officer had until then consisted mainly of quarantine enforcement and abatement of public nuisances. The story of Dr. Pomeroy's initiative in the development of this rudimentary service into a comprehensive health and welfare program can not be told here for want of space. The chief obstacle to the development was removed in 1919, when the Legislature passed a law which permits municipalities to contract for public health services with Los Angeles County.

By 1924 nineteen cities were buying their public health service from the county and 121 school districts were sharing costs with the county through the joint employment of nurses, dentists and physicians. In that year plans were submitted for a number of buildings covering the county geographically by districts which would provide under one roof in each district for the activities of the health department and of the welfare department and provide also for clinics for medical care of the indigent sick as well as preventive work.

The first health center was completed in the City of San Fernando, in 1926. Since 1926, health center buildings have been erected at Compton, Pomona, Santa Monica, Belvedere, Alhambra, Inglewood, Monrovia and Torrance. A few small child welfare stations have also been built by the county, notably at Maravilla Park, Duarte, Los Nietos and Lancaster. In a number of other sections, particularly Glendale, Whittier, Huntington Park, West Hollywood, Culver City and other points in the county, local centers have either been donated by municipal governments or private organizations or have been rented.

1. The health center provides proper housing, equipment and a meeting place for all public health, social and medical workers in a district.

2. It promotes efficiency by permitting team work between all workers in the unit. Coordination is thus brought about preventing duplication of effort and clearing all activities.

3. It renders service to the public more neighborly and permits the focusing of various types of services according to the needs of the situation.

4. It improves the public health control of the district by prompt diagnostic service both laboratory and clinical, thus enabling more efficient action on communicable disease and insanitary conditions.

5. It enables the complete organization of a standardized milk inspection service resulting in great improvement of milk supply to the public.

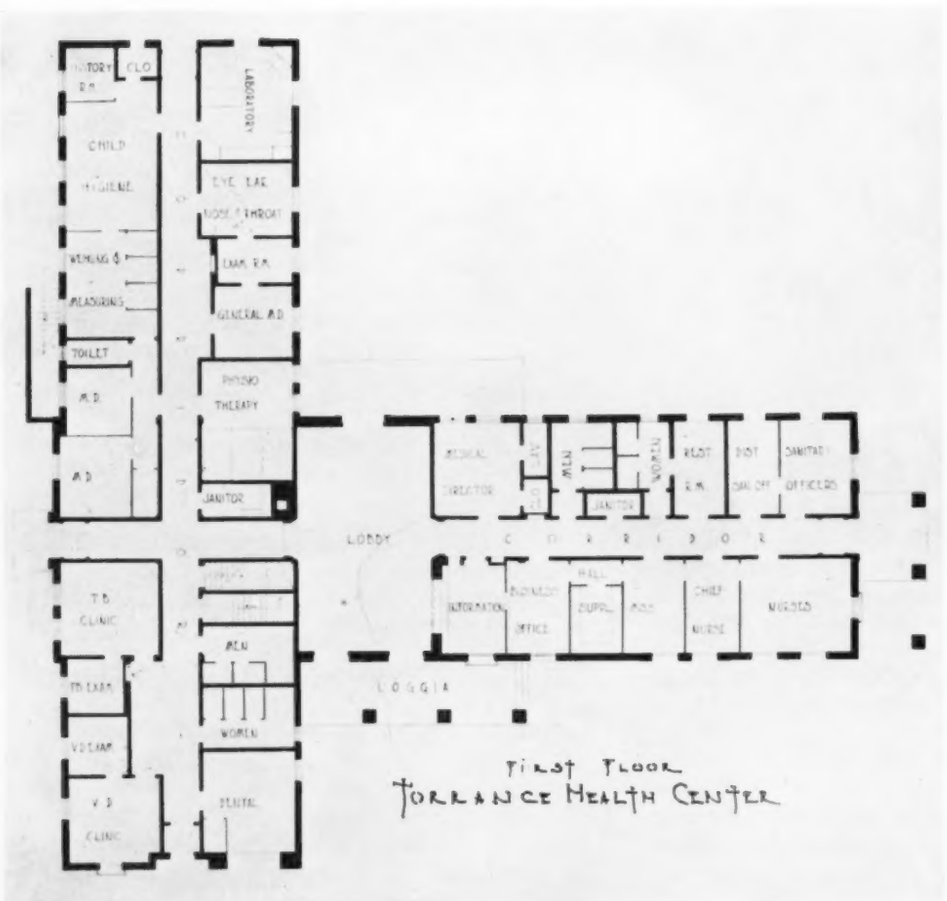
6. The health center serves as an educational institution improving the health ideals and aims of the population and thus promoting hygiene and reducing sickness.

7. During disasters, such as the Montrose flood, the earthquake of 1933 and the San Francisquito dam disaster, the health center serves as a local first aid station and organization point for relief of all kinds.

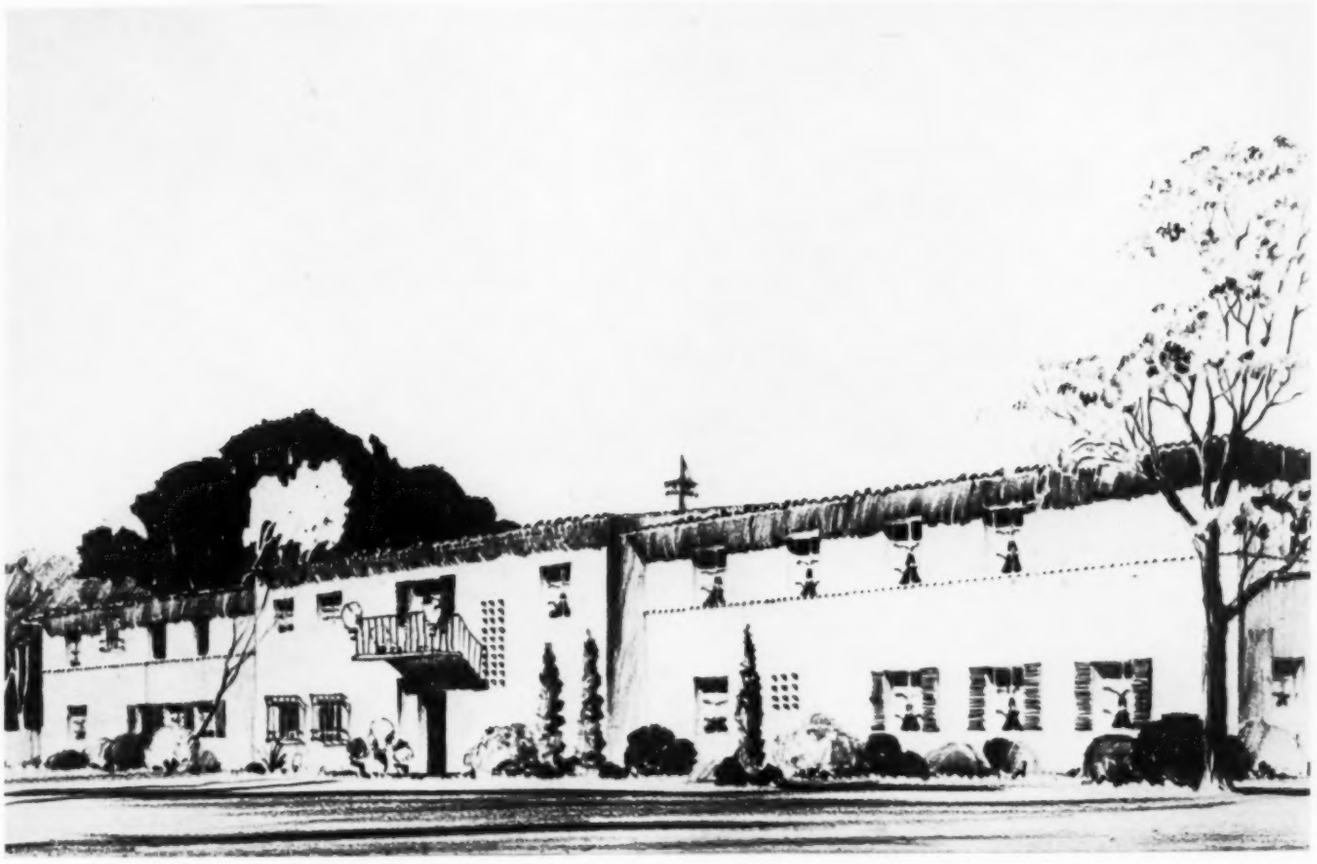
8. To the county institutions the health center facilitates more prompt admission and discharge of patients, permitting more patients to be cared for with the same number of beds. Clinic care costs much less than institutional care in most cases.

9. The health center fulfills the modern conception of medical and social work in that it mobilizes all of the necessary technical assistants, laboratory, X-ray, physiotherapy, etc., together with the medical and social resources of the community.

The department is organized into a central office with headquarters in the Hall of Justice, Los Angeles, and district offices of which there are now twelve major health centers and two sub-districts. Each district is in charge of a local district health officer who is the executive officer of his area. Technically the organization is of a mixed type comprising elements of both the functional and military type of organization, the lines of authority running from the health officer to the dis-



TORRANCE
HEALTH
CENTER
CALIFORNIA



BELVEDERE HEALTH CENTER, CALIFORNIA

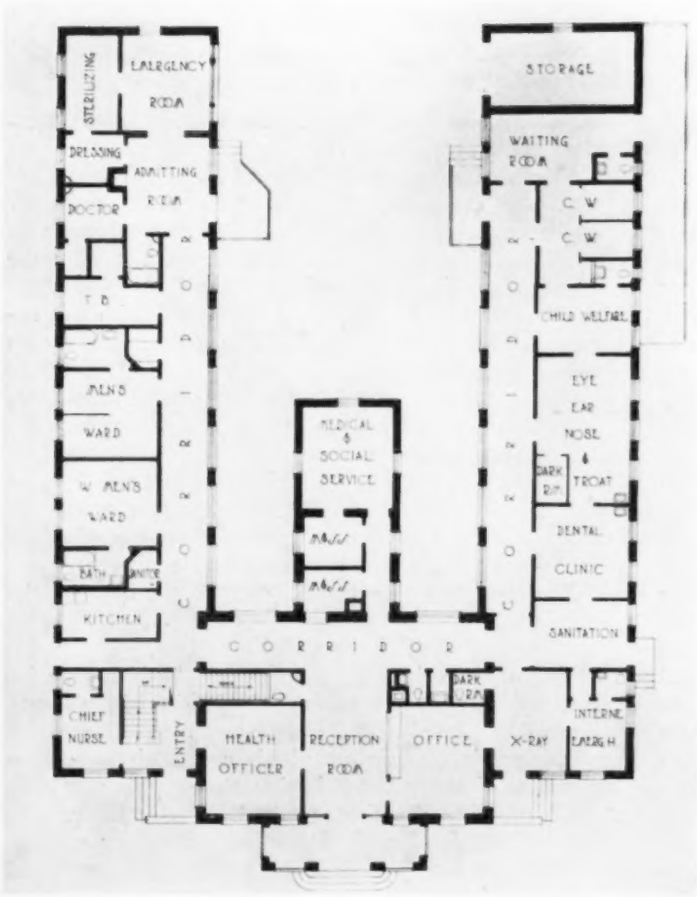
trict health officers for executive purposes, while the operating responsibilities for technical efficiency are in charge of highly trained persons who comprise the bureau heads. Thus the operating responsibilities of the department are discharged through the following bureaus: (I) General Administration; (II) Medical and Social Service; (III) Maternal and Child Hygiene; (IV) Inspections; (V) Public Health Nursing; (VI) Communicable Disease Control; and (VII) Laboratories.

The average cost of the major health center buildings, including equipment, has been $80,000. In practically all instances, the land has been furnished either by the municipality or by private contributions. The total investment in land is $22,570, the total in buildings $630,889, the total in equipment is $307,678, and the grand total capital investment $961,137. The largest building erected, that at Alhambra, cost approximately $134,000 equipped. The size of the building and the character of the equipment are predicated somewhat by the population served and the character and needs of the population. There is in Los Angeles County quite a large Mexican population. The Belvedere Health Center is equipped for teaching, having an auditorium and other facilities. This health center is affiliated with several of the universities and maintains a school of sanitation instruction and public health nursing. Considerable work is accomplished through student service, and all new employees must receive training at the Belvedere Health Center before obtaining a permanent appointment.

The per capita cost of the department at the present time is 83 cents net, deducting earnings; the gross per capita cost is 97 cents. It should be remembered that the County Health Department serves not only the rural area but also 37 incorporated cities. All duplication of services is completely eliminated with the exception of some of the work of Los Angeles City on milk inspection.

The infant mortality rate for the county in 1934 was 29.5 per thousand births. It has dropped during Dr. Pomeroy's incumbency from 120. The death rate from diphtheria in 1934 was 2.3 per hundred thousand population compared to 16 in 1923. Striking reductions have been brought about also in typhoid fever, tuberculosis and other major communicable diseases.

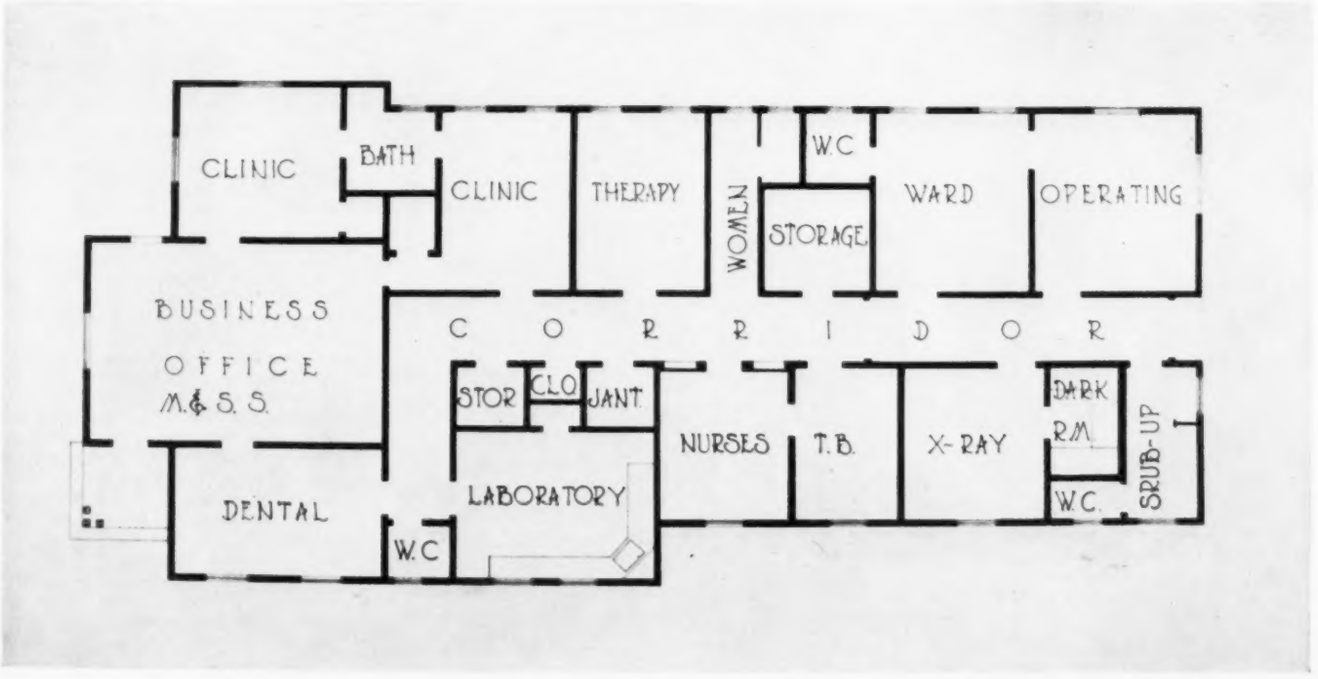
The plan has been cordially supported both by the public and by the legislature. Centralized administration, coupled with decentralized operation, prevents duplication of work and promotes efficiency. In one instance the building also houses the Justice of the Peace, Township Court, and Constable's Office. The health officer needs the support of his community organizations, particularly those having to do with providing food, clothing, housing, medical care, and accessory services. It is obvious that when community services are brought together, overhead expense is reduced and efficiency increased.



COMPTON HEALTH CENTER

HEALTH CENTERS	Year Built	Building Cost	Square Feet Area	Population Served 1934
Alhambra Health Center	1930	$116,024.94	21,395.02	83,858
Belvedere Health Center	1928	87,551.82	20,769.54	78,259
Compton Health Center.	1927	54,313.21	7,913.97	64,285
Monrovia Health Center.	1931	10,038.52	2,782.18	81,788
Pomona Health Center..	1927	74,972.56	9,667.64	36,193
San Fernando Health Center	1927	44,559.84	7,284.41	21,179
Santa Monica Health Center	1928	78,586.16	11,541.43	71,950
Torrance Health Center.	1933	38,100.00	9,888.64	55,315

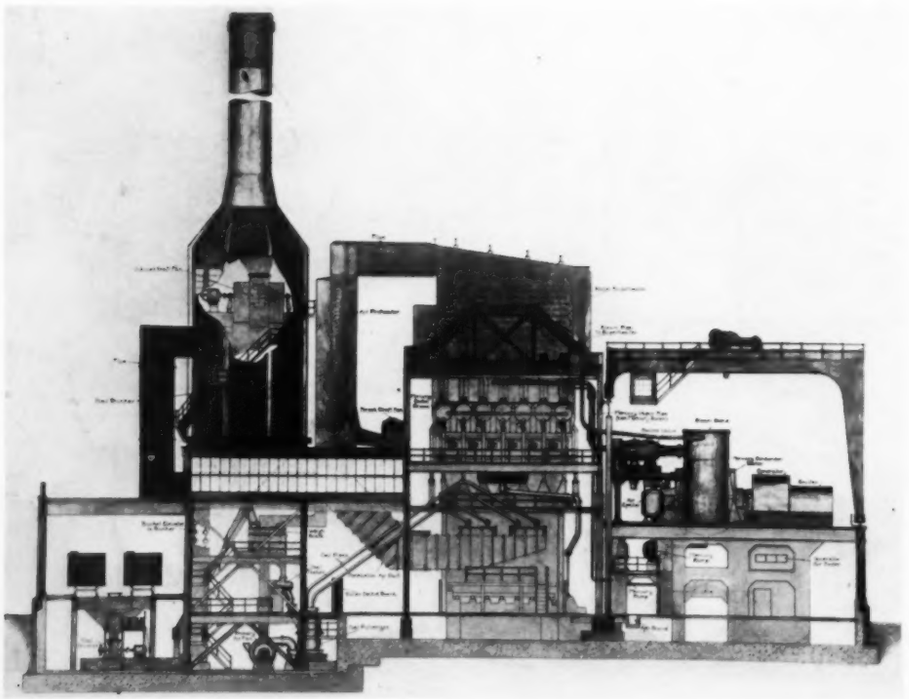
MONROVIA HEALTH CENTER, CALIFORNIA



ILLUSTRATED NEWS

HOUSING PROGRAM ACTIVITY . . . . On May 18, property owners throughout the country had pledged, under the stimulus of the better housing program of the Federal Housing Administration, $401,042,062 worth of modernization and repair. This is an increase of $8,274,646 for the week ending on that date. The majority of pledgers indicated their intention of paying cash for the improvements. Credit amounting to $69,199,582 had been advanced to 166,486 applicants under the terms of the modernization credit plan by May 18, an increase of 8,917 credit advances amounting to $3,481,127 for the week.

BUILDING CODES . . . . A special committee, composed of representatives of national organizations having an interest in the entire building code field and private experts, has been appointed, under the procedure of the American Standards Association, to investigate methods for continuing the work on building codes of the Department of Commerce Building Code Committee, recently disbanded.



MERCURY-STEAM POWER PLANT INTRODUCES NEW BUILDING FORM . . . .

An industrial structure of unique form has been built at Schenectady, New York, by the General Electric Co. It is a mercury-steam-electric generating plant supplying the General Electric Co. with steam and furnishing a by-product (electricity) to the New York Power & Light Co. Practically the entire plant—structure and equipment alike—is arc-welded, shop and field, with some of the heaviest details and complicated connections yet attempted with this means of assembly.

Two fundamental ideas governed the design, and it is believed that future growth will be much simplified thereby, according to D. A. Allee, Construction Engineering Department, General Electric Co. First of these is the elimination of practically all building, substituting, so far as practicable, segregated engineering structures. The second is the use of the "unit system," meaning in this case that a cross section or "slice" of the station includes (with some unavoidable exceptions) a complete operating unit.

From these considerations there evolved a fixed two-story structure where the offices, laboratories and controls are located, and appended to this is a one-story station that may be characterized as of "budding" type. Initially, this budding station has two units. A third will soon be added, and more will follow. Each station unit as added will handle its own coal, ashes and smoke and may, therefore, be made strictly modern even to changing the type of equipment. The groups that are thus gathered together to form an operating unit are in general structurally independent of each other and, so far as this is true, may be independently erected and the equipment of the group may be independently installed.

A station operating unit is shown in the cross section of station. Coal enters at the left, is crushed, elevated, drawn off by gravity, weighed, pulverized and blown into the furnace as shown. Forced draft fans supply air to the fire, first salvaging heat from the smoke through heat exchangers (preheaters). Induced draft fans supply the necessary draft and discharge the smoke to the chimneys. Smoke duct arrangement allows cleaning. Ash in the form of molten slag is drawn off from the furnace bottom, shattered by water jets and disposed of by pumps. At the right, serviced by electrically-welded gantry crane, are the mercury turbine generator and the condenser boilers (also unit arrangement) located out-of-doors. Behind these are the steam turbine generator, the evaporators, the deaerating and live steam boilers.

NEWS OF THE FIELD

Dana B. Johannes, Jr., and Edwin E. Whitcomb have formed the architectural firm of Johannes and Whitcomb with offices in the Carry Building, 927—15th Street, N.W., Washington, D. C.

W. O. Raiguel, architect, has changed his address from Del Monte, California, to P. O. Box 549, Monterey, California. His office is located in the Old Pacific Building.

Brinley & Holbrook, landscape architects and engineers, announce the removal of their main offices from 156 Fifth Avenue, New York City, to the Savings Bank Building, 21 South Street, Morristown, New Jersey.

Carl G. Mettberg, architect, is now located in the New Livingston Building, 2 North Dean Street, Englewood, New Jersey, instead of at 16 Depot Square, Englewood.

Geves George Kenny, architect, has reopened his architectural office at 135 North West Street, Hillsboro, Ohio. Mr. Kenny will engage in the general practice of architecture but will specialize in dairy plant design.

William Kaeser has opened an office for the practice of architecture at 905 University Avenue, Madison, Wisconsin.

The 10th anniversary of the formation of the Camden (N. J.) Society of Architects was celebrated by a banquet and meeting at the Log Cabin Lodge, Medford Lakes, New Jersey, April 25. A large number of architects attended and enjoyed addresses by Neil J. Convery, Chief Architect, Federal Housing Administration; Kenneth W. Dalzell, Vice-President of the N. J. Chapter of A.I.A.; and Seymour Williams, State Wide Supervisor of the Historic American Buildings Survey. The meeting was under the direction of Herbert N. Moffett, chairman, and Arthur B. Gill, president.

At a meeting of the Managing Committee of the Ion Lewis Scholarship in Architecture on April 13, Harlow Hudson, graduate of the School of Architecture and Allied Arts of the University of Oregon, now a graduate student at the Massachusetts Institute of Technology, was awarded the 1935 Traveling Scholarship. A stipend of $1200 is included in the grant.

Jerome Raphael, a student at Massachusetts Institute of Technology, won first prize in the seventh annual bridge design competition held by the American Institute of Steel Construction. Alexander Matthews, Jr., a student at the Yale School of Engineering, won second prize. First honorable mention was given to David Hiat of New York University, and second honorable mention to Fred A. Thompson, Jr., of Iowa State College. The problem was to design a steel grade crossing elimination bridge carrying a highway over a railroad and another highway parallel to the railroad. In addition to giving the students certificates of award, the first prize carries a cash compensation of $100 and the second prize $50. The Jury of Award consisted of Dr. Shortridge Hardesty, E. R. Needles, consulting engineers of New York; H. Craig Severance, J. Andre Fouilhoux, architects of New York, and A. Lawrence Kocher, managing editor of The Architectural Record.

The establishment of graduate courses in city planning leading to the degree of master in city planning is announced by Dean William Emerson of the school of architecture of the Massachusetts Institute of Technology. This is the second major development in the Institute's program in city planning since its inauguration in 1922. The present five-year course which leads to the degree of bachelor of architecture in city planning was created three years ago.

Award of the Boring Medal for 1935 to Logan Stanley Chappell of Macon, Georgia, second year student in the Columbia School of Architecture, is announced by Dean Joseph Hudnut. The award was established last year by the Alumni Association of the School of Architecture in honor of Dean Emeritus William A. Boring. Mr. Chappell submitted the winning design in a competition the subject for which was "A Terminal for Ocean Liners on the Hudson River." Second place was won by Harry K. Wearne of Wharton, N. J., and third place by Franklin B. Dailey of Mt. Vernon, N. Y.

Announcement of the annual competition for a graduate scholarship in the department of architecture of the New York University School of Architecture and Allied Art has been made by Dean E. Raymond Bossange. The scholarship carries an income equal to the tuition fee for the year and is open to any graduate of an approved school of architecture who is between 22 and 30 years of age and is a citizen and resident of the United States. Applications must be filed not later than June 8. The competition will consist of a design problem involving a reasonable knowledge of design and construction. The problem selected will be mailed to reach the contestant on June 15 and a preliminary sketch must be mailed before noon on June 24. Each competitor must work under the supervision of a member of the American Institute of Architects. The competition will be judged by three nationally known architects who are in no way connected with New York University.

CALENDAR OF EXHIBITIONS AND EVENTS

June 3	Closing date for small house competition sponsored by Pencil Points.
June 8	Closing date for applications for scholarship at New York University School of Architecture.
June 15	Distribution of programs in Modernize-Main-Street Competition conducted by The Architectural Record and sponsored by the Libbey-Owens-Ford Glass Company of Toledo.
June 23-26	Housing Congress of the International Housing Association in Praque.
July 16-20	Fourteenth International Housing and Town Planning Congress in London.
August 12	Closing date for Modernize-Main-Street competition conducted by The Architectural Record and sponsored by the Libbey-Owens-Ford Glass Company of Toledo.
August 26	Jury judgment of entries in Modernize-Main-Street competition conducted by The Architectural Record and sponsored by the Libbey-Owens-Ford Glass Company of Toledo.
October 10-19	Architectural League Exhibition, Grand Central Palace, New York City.
October 15	Closing date of eighth annual small house competition conducted by House Beautiful magazine, 572 Madison Avenue, New York City. Rules and conditions sent on application.

Photograph by Hedrich-Blessing Studio

IN THE JULY ISSUE

STORES AND STORE FRONTS: As a supplement to earlier studies on Shopping Centers (February 1934 and July 1934), there will be an article on the store building, its physical planning to fit the true requirements of sales and customer needs.

APPLIED DESIGN: A portfolio of selected examples of lighting fixtures designed by architects—ceiling lights, indirect lighting, table lights.

MODERNIZATION WORK: Examples of made over buildings eligible for insured loans up to $50,000 under the FHA.

AMALGAMATED HOSIERY WORKERS APARTMENTS IN PHILADELPHIA: W. Pope Barney, architect; Kastner and Stonorov, associate architects.

CAFE OF THE NATIONS, WASHINGTON, D. C.: Joseph Urban Associates, architects. A recently completed restaurant in the national capital designed by Otto Teegen and Irvin L. Scott, successors to the late Joseph Urban.

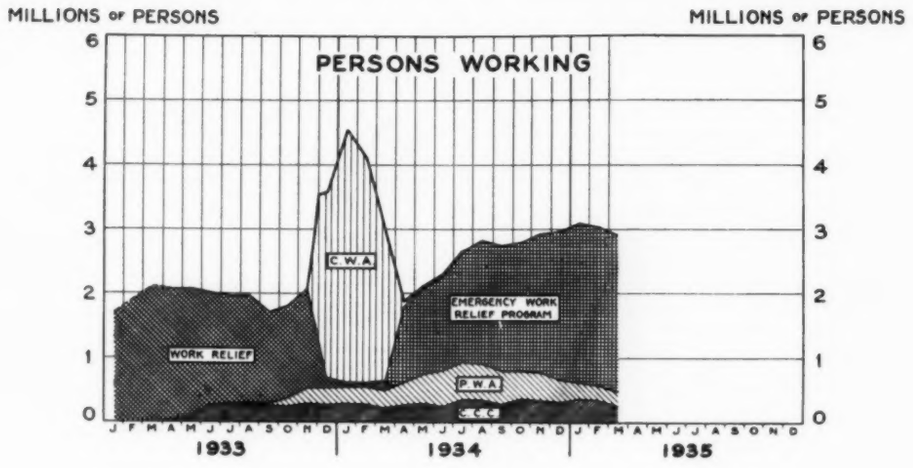
AMALGAMATED TRUST BUILDING IN CHICAGO: Holabird and Root, architects. A taxpayer building that is constructed so as to permit increase in height and diversification in use.

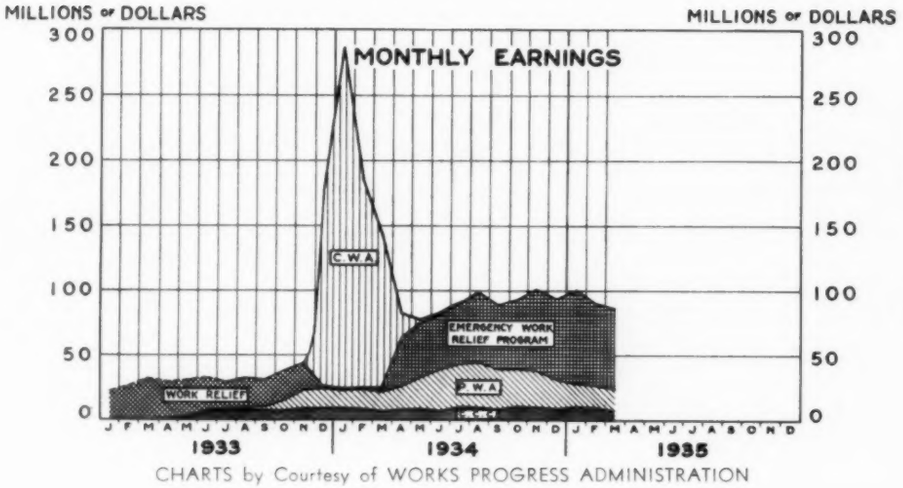
STORES

A special portfolio of store fronts and a check list of store requirements will be extra features in the next issue. This material, it is believed, will offer valuable suggestions to architects and designers entering the "Modernize-Main-Street" Competition, sponsored by the Libbey-Owens-Ford Glass Company and announced in this current issue on pages 8 and 9.

Roof terrace of the Amalgamated Hosiery Workers Apartments in Philadelphia

Photograph by F. S. Lincoln





CHARTS by Courtesy of WORKS PROGRESS ADMINISTRATION

EMERGENCY WORK PROGRAMS: 1933-35

By L. SETH SCHNITMAN
Chief Statistician
F. W. Dodge Corporation

The concept of work relief for the unemployed is not new. Even before the passage of the so-called Works-Relief Act with its fund of $4,880,000,000 (Emergency Relief Appropriation Act of 1935) many persons were engaged on emergency work or "made-work" programs. As will be seen from the chart approximately 1,750,000 employable persons were engaged on work programs as early as January 1933; by March, this number had expanded to roughly 2,100,000. In April of that year the Civilian Conservation Corps came into being; despite the inclusion of this agency, the total number of persons on work programs dropped gradually until by September, 1933, the number had fallen to approximately the level which existed at the beginning of the year.

September, it will be noted from the chart, was the first month in which direct employment on the PWA program appeared (provided for by Title II of NIRA—June 16, 1933). By November 1933 only about 300,000 were engaged on construction work under the PWA. It then had become apparent that the program for which $3,300,000,000 had been appropriated was not putting men back to work as quickly as had been expected. This condition gave rise to the development of the Civil Works Administration; work-relief inaugurated by the CWA, during its duration, virtually superseded all other work-relief except that under the CCC and the PWA.

With winter needs for reemployment met, the CWA was sharply curtailed until by April of 1934 it was virtually abandoned as a major works program. In the process of curtailment, persons previously on CWA projects were absorbed in the Emergency Work Relief Program.

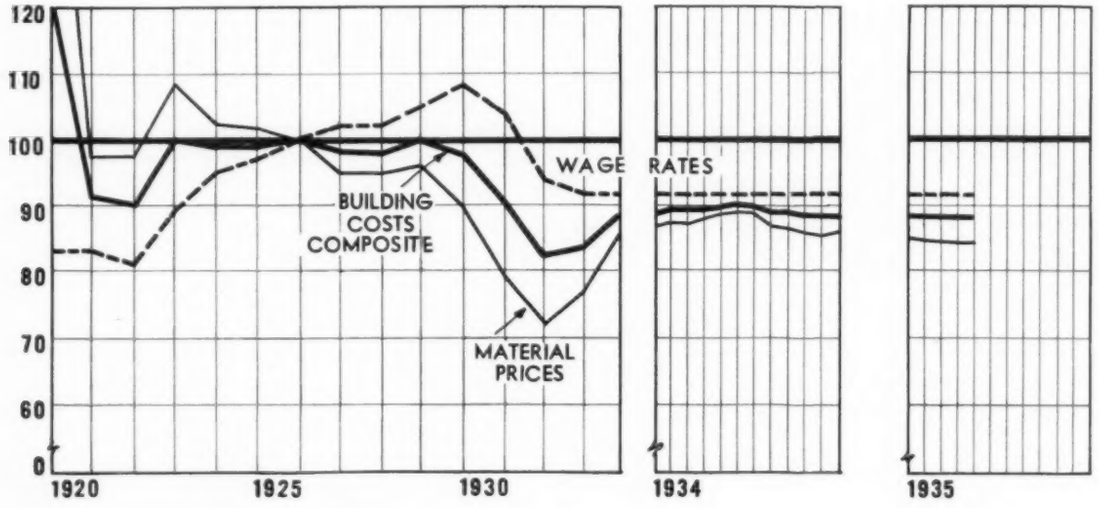
From May forward through January 1935, the curve of total employment on the program mounted almost continuously; for January it exceeded 3,000,000, of which approximately 2,500,000 were on FERA work projects. At the maximum during the summer of 1934 the PWA program had afforded direct work to less than 700,000.

The new program under the Works-Relief Act, it is thus seen, starts with approximately 2,500,000 persons previously engaged on FERA work-relief projects. The number engaged on construction projects under the old PWA program is less than 300,000 while the CCC program is presently engaging approximately 300,000.

Under the new program those engaged on FERA work projects will largely be continued on the same or other work projects. The CCC will be expanded to some 600,000. It is expected that employment on PWA and highway projects, housing, etc., will give considerable employment to persons not now engaged, but it is to be doubted if the new program will at any time during its operation provide work for a total number of persons as great as that shown at the peak of the old CWA.

At the peak of the CWA in 1934, monthly earnings of workers totaled almost $300,000,000, as against current levels of less than $100,000,000; payments are about twice as great as they were for 1933, although the total number of workers has increased by only about 50 per cent.

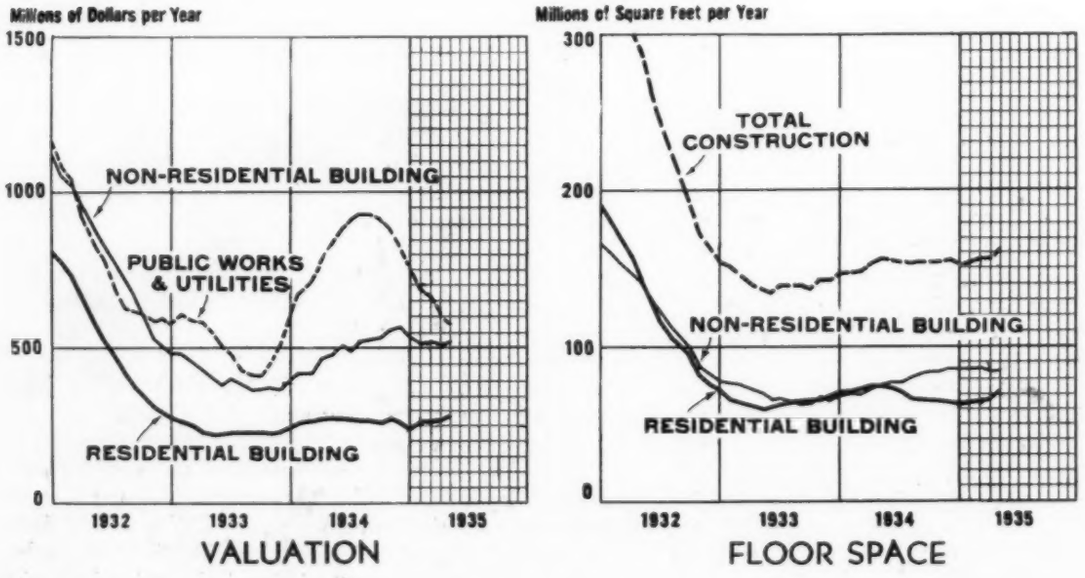
MATERIAL PRICES, BUILDING WAGE RATES, AND BUILDING COSTS . . . 1926 monthly average = 100



Practically no change has occurred in recent weeks in the price index for building materials. Likewise, wage rates in the building trades continue at the same level which has prevailed now for months. The combined effect of these factors is a staple index of construction costs at a level about 12 per cent below the average for the year 1926.

CONTRACTS FOR CONSTRUCTION . . . 37 EASTERN STATES

Curves plotted as 12-month moving totals



The curves on these charts indicate twelve-month moving totals, i.e., totals for the twelve months ending with the months plotted. It is seen that residential building—both from the standpoint of valuation and floor space totals—has been trending upward since the end of 1934. This is the most significant single development of recent months for it is probable that residential building has finally established a firm base below which it will not fall and from which a sustained recovery may proceed.

"Everybody talks about the weather but nobody does anything about it."

—MARK TWAIN

Today Genasco does do something about it

A Genasco Standard Trinidad Built-up Roof protects from the weather even Mark Twain's namesake — the Mark Twain Hotel, Elmira, N. Y. Not only is a Genasco Standard Trinidad Built-up Roof used on this splendid structure, but on commercial, industrial, institutional and public buildings throughout the nation.

Trinidad Lake Roofing Asphalt with which a Genasco roof is waterproofed, is a native product, and from nature's processing it gets its ability to afford unusual protection against the destructive actinic or ultra violet rays of the sun.

What leading architects think of the stability and weather-resisting qualities of a Genasco Standard Trinidad Built-up Roof is graphically shown in the high type of commercial, industrial, institutional and public buildings for which they have specified it. Many of these buildings are illustrated in your copy of "For Your Roof," which you may have by filling out and mailing the coupon below.

THE BARBER ASPHALT COMPANY
PHILADELPHIA
New York Chicago St. Louis

WE ARE CO-OPERATING BETTER HOUSING PROGRAM

Genasco
Roof security is *felt* with Trinidad

STANDARD TRINIDAD
Built-up Roofing

THE MARK TWAIN HOTEL, Elmira, N. Y., has been protected with a Genasco Standard Trinidad Built-up Roof since its erection. Associate Architects: Haskell & Considine. General Contractors: Lowman Construction Co, Elmira, N. Y. Roofing Contractor: Harry R. Burgess, Elmira, N. Y.

THE BARBER ASPHALT COMPANY, 1600 Arch Street, Philadelphia, Pa.

Please send me a copy of your illustrated book "For Your Roof" which carries illustrations of many prominent buildings in all parts of the country protected with Genasco Standard Trinidad Built-up Roofing.

Name.....

Address.....

OUR CATALOG IS FILED IN SWEET'S

AR6

NEW MATERIALS & EQUIPMENT

NEW CATALOGS
RESEARCH REPORTS
MANUFACTURERS' LITERATURE

Architects are invited to use the coupon on this page as a convenient means of obtaining manufacturers' publications describing in detail the products and materials mentioned

F 51
PRINCIPLES OF AIR CONDITIONING

"This Thing Called Air Conditioning," a booklet issued by the Minneapolis-Honeywell Regulator Company, is a discussion of the six cardinal factors governing all-year-round conditioning of the air, the primary requisites for successful conditioning, a discussion of the various systems and the importance of automatic control to the proper operation of any system, large or small.

F 52
SHEET METAL

A booklet, "Suggestions for Galvanized Sheet Metal Specifications," released by American Rolling Mill Company, contains detailed specifications for the use of galvanized iron in various applications including roofs, gutters, flashings, scuttle and skylights. One page is devoted to galvanized iron as a material for roofing.

F 53
JOSAM MANUFACTURING COMPANY CATALOG

Complete information on the subject of drains and traps, interceptors, adjustable closet connections, swimming pool equipment, back water sewer valves and other products is contained in the new Catalog "H" of the Josam Manufacturing Company, Cleveland, Ohio. Comprising 104 pages it contains more than 300 illustrations of Josam products, including detail renderings indicating the application of certain products in construction. Many newly developed products not heretofore cataloged are fully illustrated and described.

F 54
NEW OIL-BURNING BOILER

National Radiator Corporation announces a new line of National Steel Oil-Burning Boilers, complete with burner and all necessary controls inclosed within the jacket. The styled jacket was designed by Lurelle Guild, industrial designer. The front and back of the jacket are removable to provide easy access to the burner and controls. A unique feature is the fact that it is shipped completely assembled, ready for installation. Mechanical features of the new boiler include: cylindrical, water-backed, refractory-lined combustion chamber; three pass flue gas travel; and built-in indirect water heaters. A folder offered by the manufacturer shows three sizes, but these boilers will be available in two additional sizes, thus offering a range of outputs from 200 square feet to approximately 1,000 square feet of steam radiation.

F 55
AUTOMATIC COAL FIRING

The values of "Motorstokor" in safety, cleanliness, convenience, economy and comfort are reviewed in an interesting booklet released by Motorstokor Corporation. Though the use of automatic coal firing for *residences* is the subject of this booklet, Motorstokor equipment is also produced for commercial and industrial installations. The booklet will be furnished on request.

AN OFFER TO ARCHITECTS PRACTICING IN UNITED STATES

TO OBTAIN FURTHER INFORMATION

about any products mentioned, write the index numbers in space below. For literature about products *advertised* in this issue, give name of the product and manufacturer. Return coupon to The Architectural Record, 119 West 40th Street, New York, N. Y.

.....

.....

Name _____

Position _____

Street _____

City and State _____

Delano and Aldrich, Architects

Hegeman-Harris Co., Inc., Builders

Anaconda Brass Pipe in the American Embassy in Paris

IN the new American Embassy building in Paris . . . designed by Delano and Aldrich to fit into the historical setting of the Place de la Concorde... Anaconda Copper and Brass were installed.

Anaconda 85* Red-Brass Pipe . . . more than 30,000 lbs. of it . . . was used for water distribution lines; and Anaconda Sheet Copper for waterproofing the cellars and basement.

Throughout the civilized world, architects have made extensive use of Anaconda Copper, Brass and Bronze for many useful and ornamental purposes. These products meet every quality requirement and assure long-term economy . . . freedom from all annoyance and expense caused by rust.

*Trade-mark registered U. S. Patent Office

ANACONDA

THE AMERICAN BRASS COMPANY

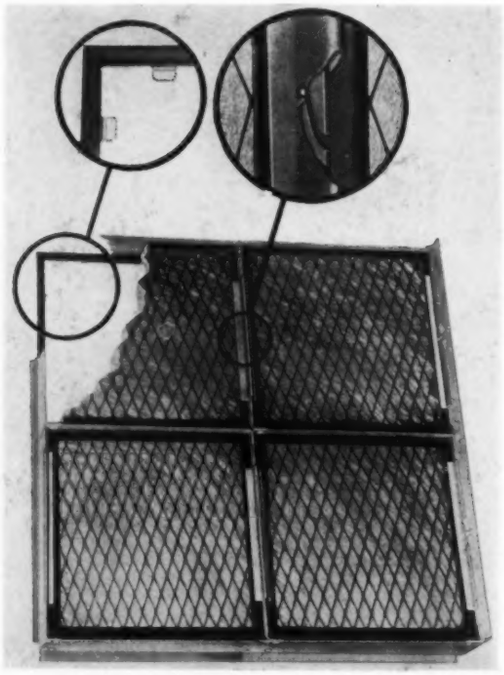
General Offices: Waterbury, Connecticut

Offices and Agencies in Principal Cities

ANACONDA COPPER AND BRASS

F 56
NEW "DUSTOP" FILTER FRAME

The manufacturers of "Dustop" replacement-type air filter are enhancing the filter's value by improving the frame in which it operates. The new air filter frame, now made available by the Owens-Illinois Glass Company, Toledo, increases "Dustop" efficiency by employing a felt strip between filter and frame against which the filter is tightly held by a simple wedge lock. This arrangement provides a positive seal that prevents leakage of dirt-laden air at any point.



The circle at the left in the illustration, shows a close-up view of the square felt strip, which is inserted when the frame is constructed and which is held permanently in place by bending the metal tabs over the frame flanges. The circle at the right in the illustration, shows the detail of the wedge lock which is applied on the intake side of the frame to force the filter firmly against the felt "gasket." This device is easy to put on or remove and is self-adjusting to variations in thickness of the filters in the bank.

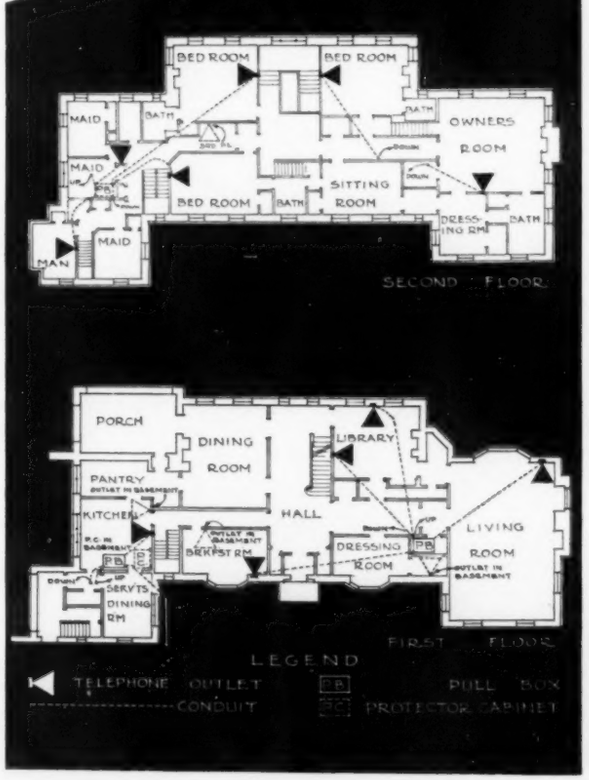
F 57
"FREEWHEELING" COMES TO THE DRAFTING ROOM

Hamilton Manufacturing Company, Two Rivers, Wis., introduces a coaster drafting chair for engineering tables and a battery of coaster lights for illuminating drafting boards. The coaster drafting chair (see illustration) provides an effortless lateral movement in front of a drafting table, and permits a forward and backward movement through a pivot in the lower part of the frame. The seat may be adjusted for height and proper distance from the table, to fit individual needs. More drawing tables may be used in a given area, it is said, because less distance is required between tables. Front legs of the chair are supported on a lateral track attached to the drafting table, with ball-bearing fibre wheels running in a channel guide. The outside legs have ball-bearing casters which roll on the floor.

The new Hamilton-Calumet coaster drafting lights consist of three adjustable lights attached to a ball-bearing, rolling unit which runs in a channel at the back edge of a drawing board. Lights may be moved along the back of the drawing board, wherever needed.

15 telephone outlets planned for gracious living

The residence of Mr. H. C. Ford, Kings Point, New York. GEORGE W. CONABLE and LEON H. SMITH, New York City, *Architects.* Wehle Engineering Co., Jamaica, N. Y., *Builders.*



TELEPHONE conduit was built into the walls and floors of this well planned house. Fifteen outlets were carefully located at strategic points—3 in the basement, 5 on the first floor, 6 on the second, and 1 on the third. The cost? Surprisingly small.

Probably not all the outlets will be in use at any one time. (8 are now wired and 4 telephones are in service.) But they're there—ready. Portable telephones can be plugged into guest rooms as needed. Other instruments can be moved to meet future requirements without exposing wiring.

Above all, it is possible to make or receive calls from any part of the house at any time, quickly, comfortably, *privately*. No running up and down stairs. Steps and minutes are saved for all the household.

Adequate, built-in telephone facilities will make all your residence projects more modern, more livable. The local telephone company will be glad to help you develop efficient, economical conduit layouts. No charge, of course. Just call the Business Office and ask for "Architects' and Builders' Service."

FOR FURTHER INFORMATION ON BELL SYSTEM TELEPHONE SERVICES AND EQUIPMENT, SEE SWEET'S CATALOGUE

F 58
BOOKLET ON FORCED CIRCULATION HEATING SYSTEMS

Bell and Gossett Co., Chicago, announce a complete Design Manual for forced circulation hot water heating systems. The basic feature of the designs shown is the use of piping and radiation of practical steam sizes—a condition made possible by the greater capacities of the B & G Booster—a centrifugally designed circulating pump. Also included are tables of heat loss coefficients and instructions for determining radiation by the B.t.u. heat loss method.

F 59
CONVECTOR RADIATOR VALVE

A new gate valve for convector radiators has been placed on the market by the American Radiator Company. Designed to offer a straightway valve that can be used conveniently within the restricted dimensions found in inclosures, it has a female union on one end to facilitate installation when a bottom connection is used on radiators of this type. A male thread on the other end screws directly into the convector before the latter is set in position. The union connection is then screwed down over the stub after the radiator has been placed, and the operation is complete. Moderately priced, the product is known as the No. 375 Ideal Convector Gate Valve.

F 60
WATER PIPE SIZES

Rules for determining pipe sizes for groups of fixtures and for risers and mains are set forth in a booklet issued by Bridgeport Brass Company and edited by Walter S. Timmis, consulting engineer and past president of American Society of Heating and Ventilating Engineers. Copies of this booklet are available on request.

F 61
NEW CATALOG OF TRANE FANS

Capacities of the various Trane fan models are tabulated in full detail in the new catalog describing and illustrating the products of The Trane Company, La Crosse, Wis. Supplementary information includes recommendations for fan selection, arrangement and installation.

F 62
NEW AIR FILTER

A replaceable air filter designed to reduce power costs in the operation of air conditioning equipment by establishing uniform resistance for the air flow, is announced by the American Radiator Company. The filter is made of corrugated fiber board with cellular passages set at an angle so that air scrubs along the sides of the passages and dust is absorbed by a special compound with which the board is coated. It can be used in air conditioning installations, ventilating systems, warm air furnaces, window ventilators, air compressors and interna! combustion engines. In operation, each dust particle is saturated with the special compound used as a coating and becomes a medium for absorbing more dust, thus assuring long life to the filter.

F 63
HIGGINS INTRODUCES NEW COLORS

Chas. M. Higgins & Co., Inc., manufacturers of drawing inks, writing inks and adhesives, announce improvements in their line of drawing inks. Three new colors—Blue Green, Light Brown and Lemon Yellow—have been added to the line. Some of the old colors have been renamed more accurately as follows: Green to Emerald Green, Brown to Dark Brown, Yellow to Chrome Yellow, but with no change in hue. As revised, the Higgins' line of drawing inks offers a wide color range consisting of the following waterproof colors: Carmine, Scarlet, Vermilion, Brick Red, Dark Brown, Light Brown, Orange, Chrome Yellow, Lemon Yellow, Emerald Green, Blue Green, Blue, Indigo, Violet, White, and Neutral Tint. New labels adopted are striking and easy to read.

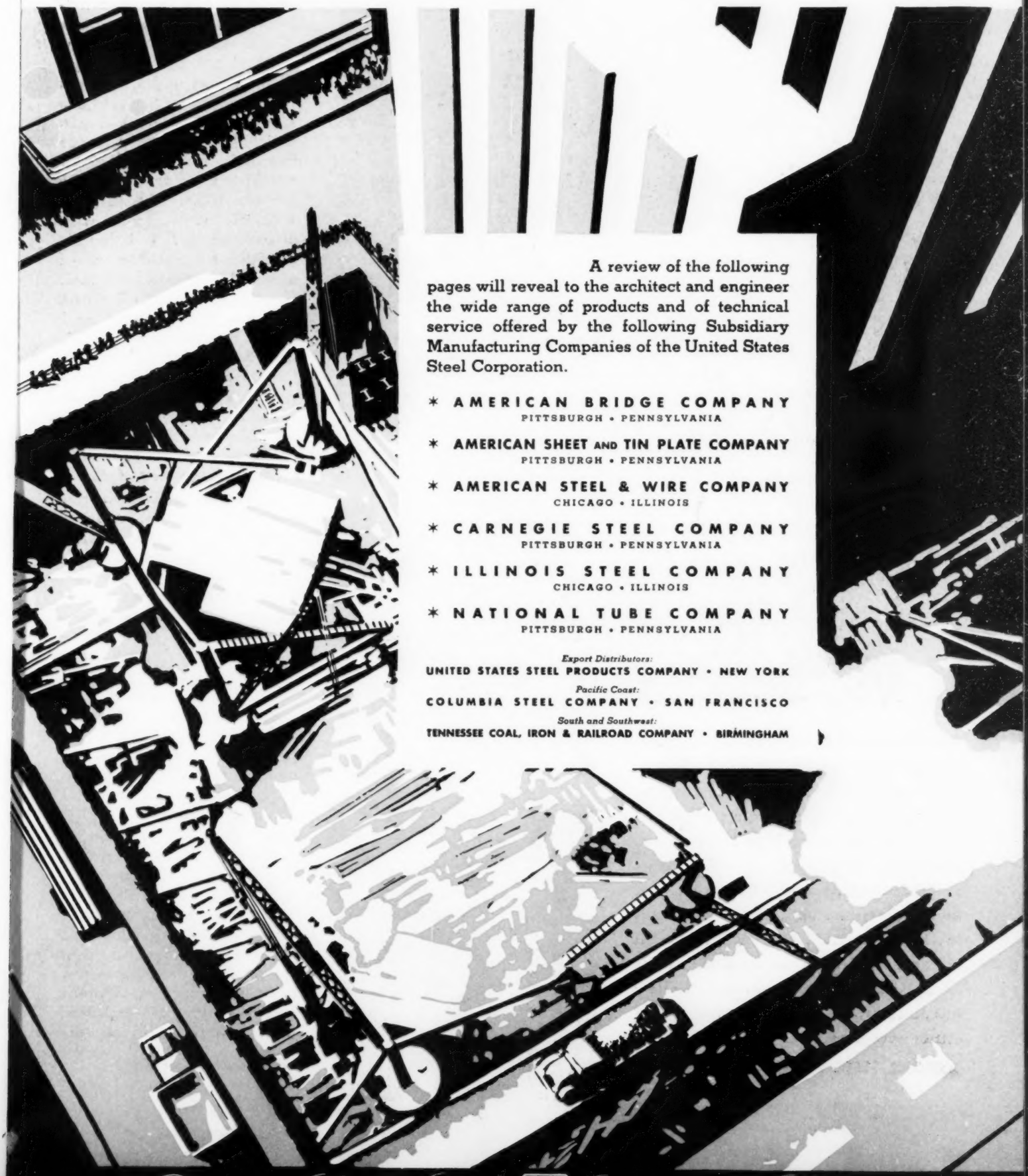
F 64
GAS WATER HEATER

Announcement is made by The Premier Heater Division, Crane Co., of a new, multiflue, super-circulating heater—the Royal Booster Gas Water Heater. It is especially built for heavy duty direct water heating requirements up to 140 gallons per hour. Its internal construction includes three distinct heating surfaces: (a) The main combustion chamber; (b) Five individual flues equipped with patented integral heat conductor; (c) Heating dome. This new water heater has its greatest application in apartments, office buildings, hotels, factories and other installations where hot water is required in large volume.

F 65
FOOD SERVICE EQUIPMENT

Illustrations of the use of monel metal food service equipment in hotels, restaurants, cafeterias, schools, railroad dining cars, steamships, hospitals and public institutions are contained in a booklet offered by International Nickel Co. Monel metal is claimed to be the most serviceable metal for the severe usage to which food service equipment is subjected, because of the metal's endurance, appearance, and the fact that it can be adapted to any means of fabrication.

STEEL IN THE SERVICE OF THE BUILDING INDUSTRY



A review of the following pages will reveal to the architect and engineer the wide range of products and of technical service offered by the following Subsidiary Manufacturing Companies of the United States Steel Corporation.

* **AMERICAN BRIDGE COMPANY**
PITTSBURGH • PENNSYLVANIA

* **AMERICAN SHEET AND TIN PLATE COMPANY**
PITTSBURGH • PENNSYLVANIA

* **AMERICAN STEEL & WIRE COMPANY**
CHICAGO • ILLINOIS

* **CARNEGIE STEEL COMPANY**
PITTSBURGH • PENNSYLVANIA

* **ILLINOIS STEEL COMPANY**
CHICAGO • ILLINOIS

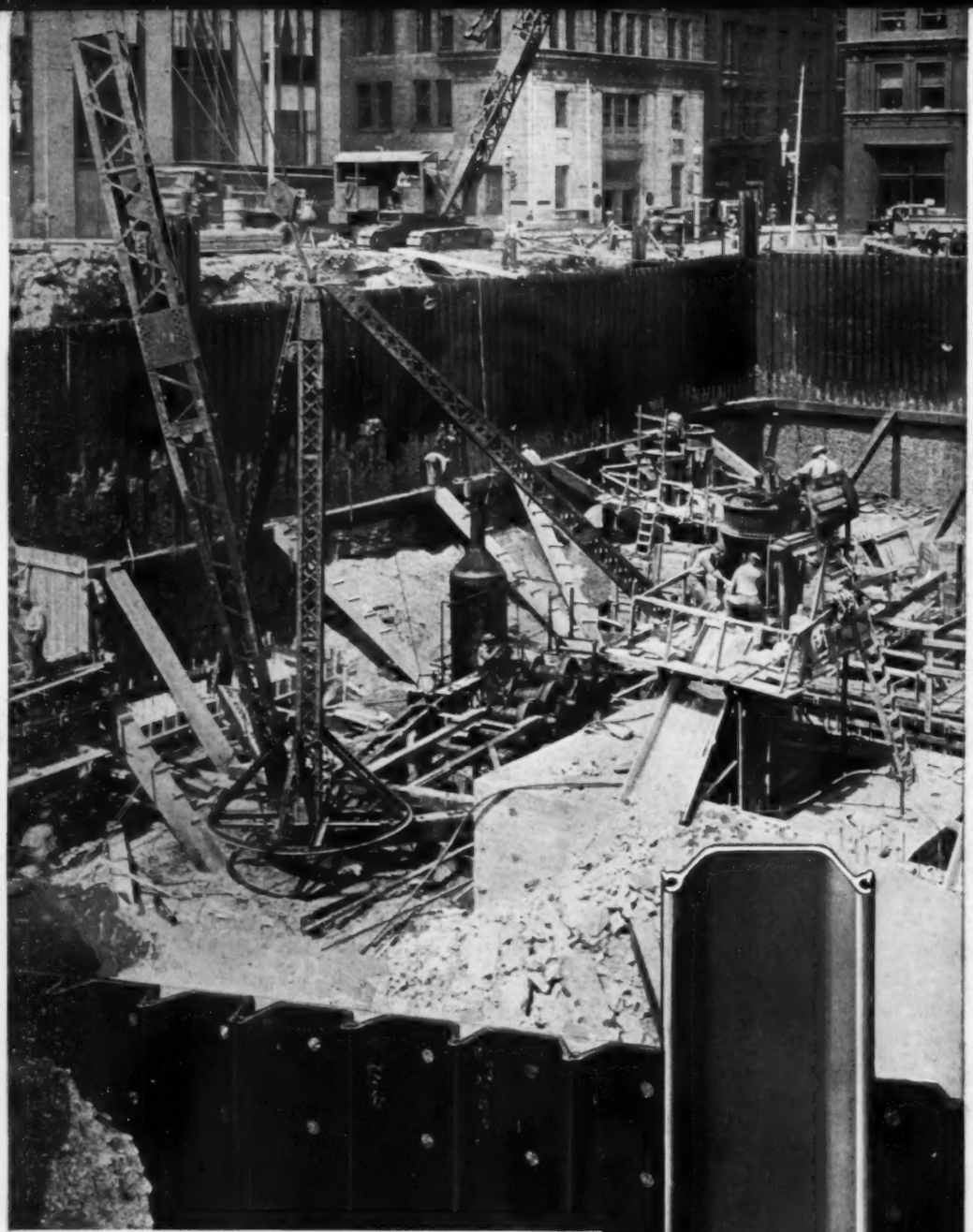
* **NATIONAL TUBE COMPANY**
PITTSBURGH • PENNSYLVANIA

Export Distributors:
UNITED STATES STEEL PRODUCTS COMPANY • NEW YORK

Pacific Coast:
COLUMBIA STEEL COMPANY • SAN FRANCISCO

South and Southwest:
TENNESSEE COAL, IRON & RAILROAD COMPANY • BIRMINGHAM

United States Steel USS *Corporation Subsidiaries*



Steel Sheet Piling has an important use in foundation work. Driven in advance of excavation, it affords maximum working area and prevents undermining of adjacent ground, walls, or streets. Carnegie Piling comprises a full range of efficient sections of both straight and arch-web types. Where the arch-web sections are used, the design is such that all the arches can be faced in the same direction, which provides a shallow but strong wall. Carnegie Piling is sold either new or used.

CARNEGIE STEEL COMPANY • PITTSBURGH

The Advent of Structural Steel, fifty years ago, was immediately recognized as the greatest single contribution to building progress. The first structural sections were rolled by a Carnegie Mill in 1884 and were used in the top four stories of the Home Insurance Building in Chicago. In 1927, wide-flange Carnegie Beam Sections (now widely known as CB's) were introduced, representing the most recent development in structural steel and providing the highest factors of strength per pound of metal. Carnegie Light-Weight Beams, Stanchions and Joists, first produced in 1934, are a further extension of the CB series. To light-occupancy structures, such as schools, hospitals and apartment houses, they bring the full benefits of steel construction at competitive costs.

Special sections for bearing-pile use are still another outgrowth of CB design. Sturdy, wide-flange CB sections were found so useful for this purpose that the requirements have been thoroughly studied and a suitable line of CBP sections has been made available.

Steel Sheet Piling is another product first rolled in America by Carnegie Steel Company. A group of well designed sections is offered, adaptable to all types of construction.

Other Carnegie products of interest to the building field include column base plates, reinforcing bars, I-Beam-Lok and T-Tri-Lok for heavy duty floors and sidewalks, safety floor plate, and a full range of standard structural steel sections. A competent engineering staff is employed and consultation is welcomed.

US STEEL

ROLLED STRUCTURAL SECTIONS FOR EVERY CONSTRUCTION NEED . . . FROM FOUNDATION TO PENTHOUSE

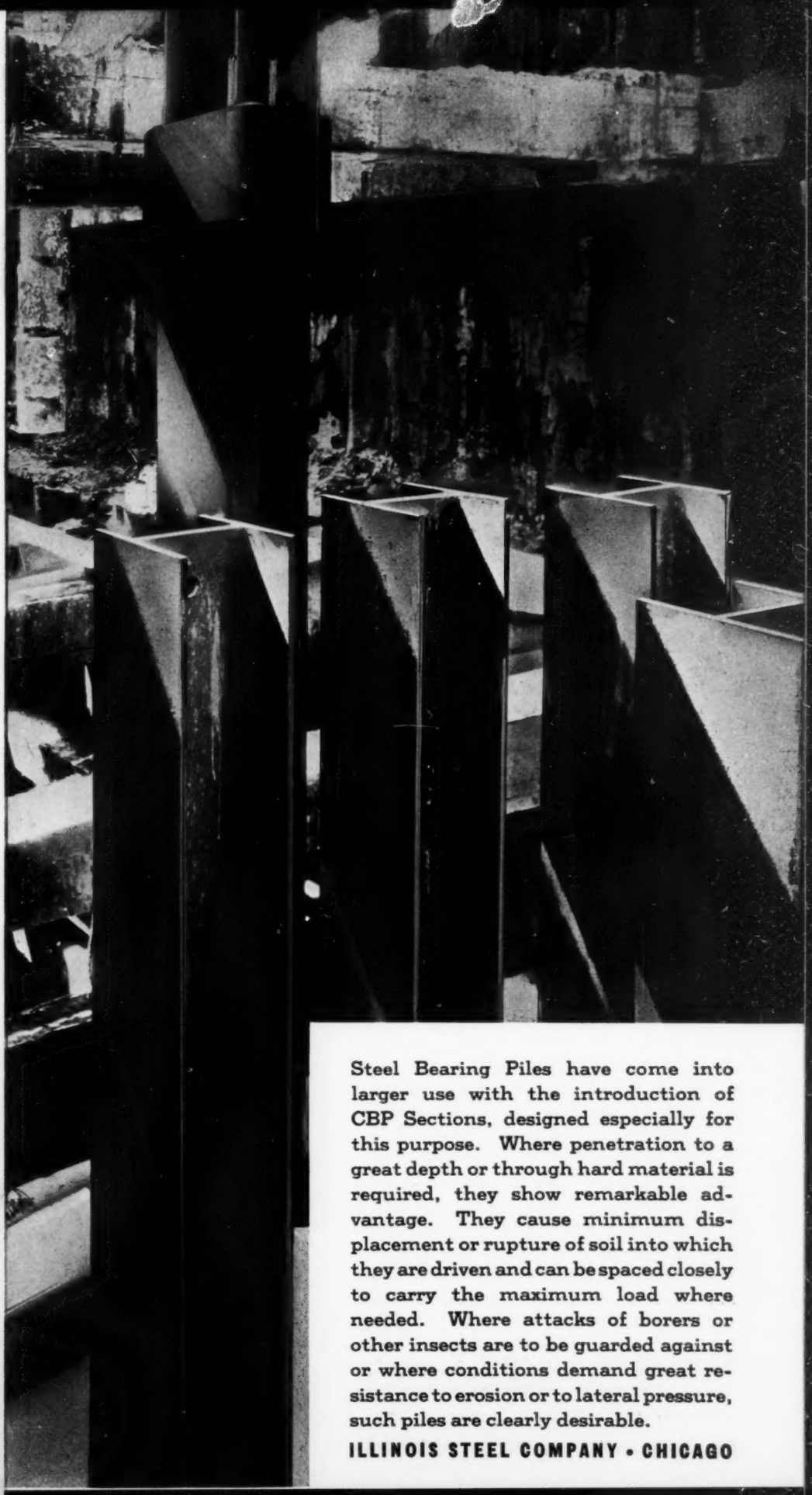
★ ★ ★

The Vast Territory centering in Chicago, where structural steel was first used, is now served by the extensive and modern facilities of Illinois Steel Company. The manufacture of high grade steels for special uses has been a distinct service of Illinois Steel Company to industry in this area and beyond. From open-hearth steel of standard specification to USS 18-8 and other alloys, these products cover a wide range and represent a great accumulated fund of technical knowledge and practical experience, which are always at the command of the user.

For the building field, Illinois products include a complete line of standard rolled sections as well as the popular CB sections, column base plates, CBP bearing piles, steel sheet piling, rolled steel plates, bars and small shapes.

Illinois Multigrip Floor Plates are a recent development embodying the utmost in security and efficiency at moderate cost. Their merit is that from whatever angle the foot may strike, it will find its tread secure. Multigrip is easy to walk on, easy to work on, and is readily cleaned. Ideal for stair treads, factory floors, elevated walkways, sidewalk openings and many other uses.

This Company has gathered abundant data on the applications, properties, and the most successful technique for using its products. On any specification, large or small, advice will be gladly given.



Steel Bearing Piles have come into larger use with the introduction of CBP Sections, designed especially for this purpose. Where penetration to a great depth or through hard material is required, they show remarkable advantage. They cause minimum displacement or rupture of soil into which they are driven and can be spaced closely to carry the maximum load where needed. Where attacks of borers or other insects are to be guarded against or where conditions demand great resistance to erosion or to lateral pressure, such piles are clearly desirable.

ILLINOIS STEEL COMPANY • CHICAGO

STRUCTURAL STEEL • CB SECTIONS
BEARING PILES • STEEL SHEET PILING
COLUMN BASE PLATES • FLOOR PLATE

USS STEEL

Recent buildings for which American Bridge Company has fabricated and erected the structural steel include the Post Office and the Pennsylvania Railroad's passenger station in Philadelphia. For Rockefeller Center, largest of building projects, American Bridge Company is fabricating the steel. One unit of that group went up at the unprecedented rate of three tiers a week . . . 41 stories in three months. Such a record, for which the erectors deserve praise, was possible only because of facilities that enabled American Bridge Company to make deliveries on so extraordinary a schedule.

AMERICAN BRIDGE COMPANY • PITTSBURGH

The Structural Steel Framework of great buildings has been fabricated and erected by American Bridge Company, or ABC-fabricated for erection by other companies, in so many cases that it might seem like undue self-glorification even to list them. Empire State Building, Rockefeller Center, the Philadelphia Post Office and the still larger one in Chicago, the magnificent new railway passenger stations in Philadelphia and Cleveland; important new freight terminal structures in New York and elsewhere are a few of the more recent examples.

Besides buildings and bridges, American Bridge Company also designs, fabricates, and erects steel dams of varying types, elevated and subway structures, turntables, barges and other floating equipment, electric furnaces (Heroult type), transmission towers and poles, substations, and many forms of special construction.

For any requirement, large or small, in which structural steel is involved, the services of American Bridge Company are always available and its facilities will be found adequate.

Carnegie Steel Company, Illinois Steel Company, American Steel and Wire Company, and other subsidiary manufacturing companies of the United States Steel Corporation furnish rolled sections, cables and wire, and other products used in the many structures for which American Bridge Company is responsible.

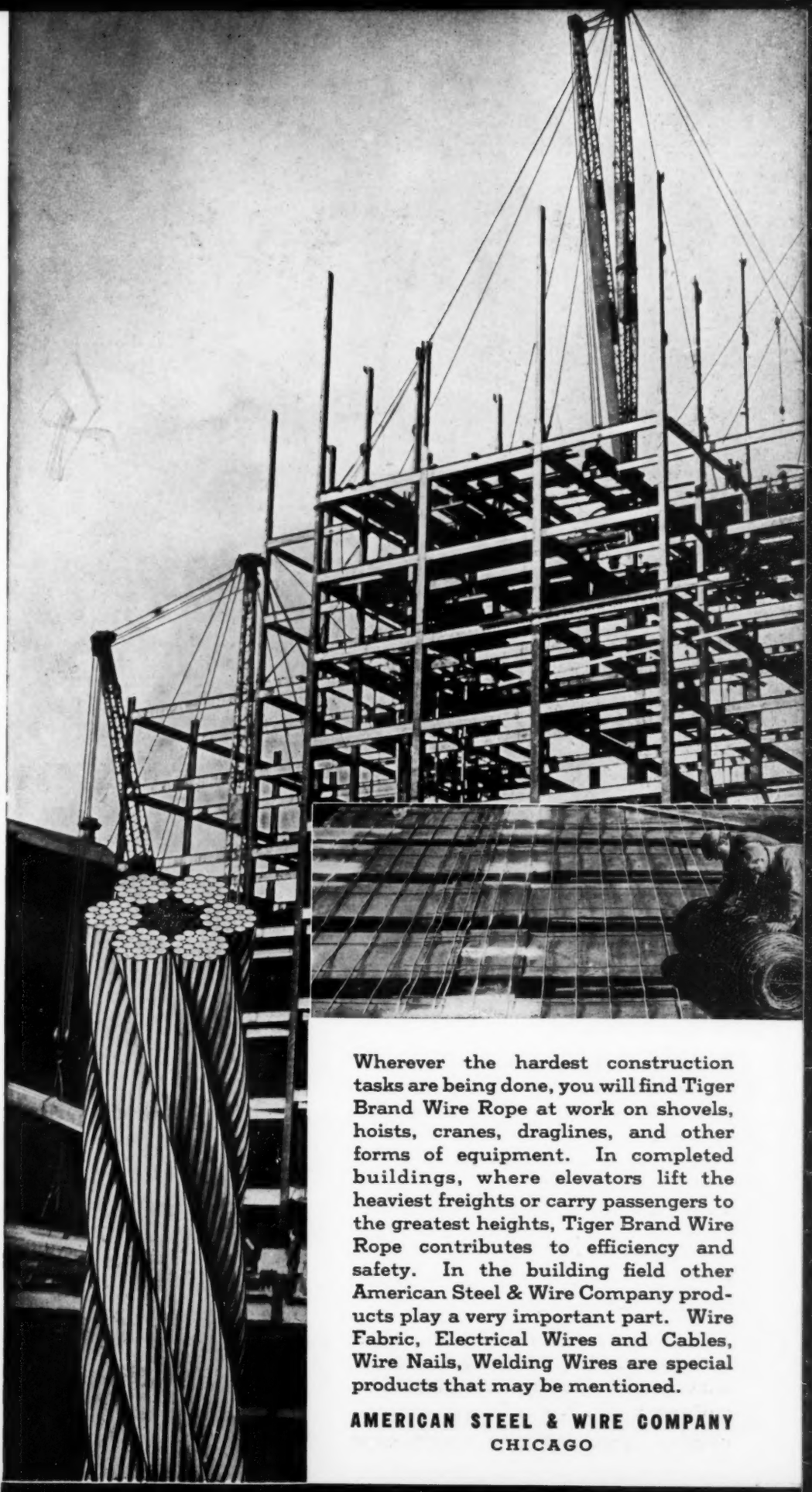
FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, BRIDGES AND SPECIAL PROJECTS

★ ★ ★

Wire Rope Must "Take It" at every point—from the deepest excavation to the highest hoist. The approved Wire Rope must endure strains by which any but the toughest and strongest of materials would be destroyed. The preferred Wire Rope is the one that, under such conditions, will show long, uninterrupted service, at a clear saving in cost. Superior economy, proved by records of actual use in many fields, through many years, has established Tiger Brand Wire Rope as standard. It is smooth-running, easy on sheaves and drums, and everyway conducive to efficient use where such advantages are important. Made to suit any and every purpose for which wire rope is employed, in either the erection or the operation of a building, it has always kept abreast of every new demand of industry.

The core and fibre of concrete construction in various forms is Wire Fabric—concrete floor slabs are an example. In many recent buildings, Rockefeller Center among them, AMERICAN Steel and Wire fabric of cold drawn wire has been used for reinforcing. This gives maximum strength and helps to make possible a proper distribution of weight in the structure. The fabric can be installed very rapidly and at very low cost, because of the exceptional ease with which it is handled.

American Steel & Wire Company's resources and organization for service are unexcelled. The plant equipment and facilities of the company enable it to meet the most exacting requirements in the manufacture of Wire and Wire Products for all uses.



Wherever the hardest construction tasks are being done, you will find Tiger Brand Wire Rope at work on shovels, hoists, cranes, draglines, and other forms of equipment. In completed buildings, where elevators lift the heaviest freights or carry passengers to the greatest heights, Tiger Brand Wire Rope contributes to efficiency and safety. In the building field other American Steel & Wire Company products play a very important part. Wire Fabric, Electrical Wires and Cables, Wire Nails, Welding Wires are special products that may be mentioned.

AMERICAN STEEL & WIRE COMPANY
CHICAGO

WIRE ROPE AND FITTINGS • ELEVATOR CABLES
WIRE FABRIC FOR CONCRETE REINFORCEMENT
• ELECTRICAL WIRES AND CABLES • NAILS •

US STEEL

Along with corrosion resistance and other factors leading to long life, handling and working qualities of pipe are important. If it can be installed with ease, it will be a big factor in economical and efficient construction. With well made, smoothly finished NATIONAL Pipe, threading, cutting, installing, tightening up and final inspection are so quickly accomplished that the immediate gain is very clear.

The property owner's interest also is better served, because of the extra tight, extra secure, extra durable job that results when NATIONAL Pipe is installed.

NATIONAL TUBE COMPANY • PITTSBURGH

Pipe is Too Important

in modern building construction and building maintenance to be any longer regarded as a minor accessory. To provide heat, water, gas, air, drainage . . . be the project large or small, pipe must function continuously; and it is therefore installed with a view to permanent service during the useful life of the building.

Two enemies of pipe, however, are often encountered in these services. They are atmospheric corrosion and the action of corrosive waters.

To protect hot and cold water lines against active waters, effectively and at little cost, National Tube Company has developed Duroline Pipe. Duroline is an improved cement lining . . . more adherent, less soluble, less affected by shrinkage, and more satisfactory in use than any heretofore known. It is immune to city and industrial waters, salt water, and a well defined range of chemical solutions. Duroline Pipe has proved satisfactory under a wide range of temperatures and other variations in service and can be recommended with confidence.

To resist atmospheric corrosion, or the effect of alternate wet and dry conditions NATIONAL Copper-Steel Pipe is both effective and economical. Thousands of service records from all parts of the country, covering more than 20 years, prove the value of copper-steel.

Pipe for piling, in the building field and elsewhere, has won increasing favor during recent years. NATIONAL Piles have been used in some of the country's largest projects.

These and other products of NATIONAL research and experiment have aided the architectural and engineering professions in keeping abreast of new demands. NATIONAL Pipe represents the skill, facilities, organization, and pride of reputation of the largest manufacturer of tubular products in the world.

PIPE COUPLINGS AND TUBULAR PRODUCTS FOR WATER, HEAT, GAS, AIR AND DRAINAGE LINES • BOILER TUBES

★ ★ ★

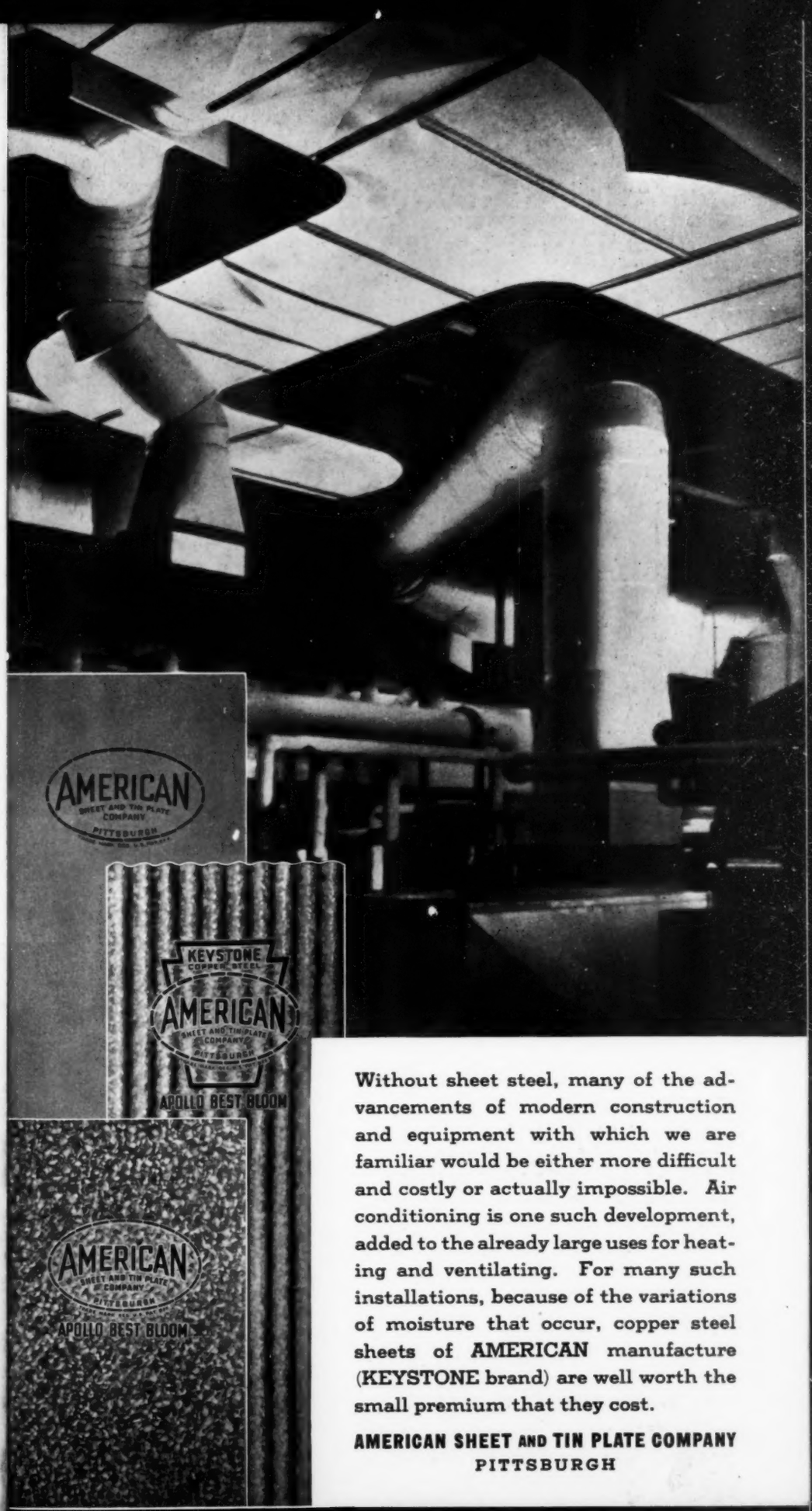
Both New and Long-Approved Applications—Roofing, Siding, Cornices, Door Frames, Window Frames, Metal Lath and Panel Sheets, light, built-up Floor Beams, Heating, Ventilating and Air Conditioning Ducts and various other equipment are represented in the building uses of AMERICAN Steel Sheets.

Improved sheets and light plates of varying composition are offered in a great range of dimensions, gauges, and finishes for different requirements—hot-rolled and cold-rolled; of plain carbon steel or copper-steel; black, galvanized, and extra-heavy zinc-coated, tin and terne coated; flat, and specially formed for roofing requirements.

Electrical sheets and special enameling sheets are of direct and indirect importance to building.

Copper-steel sheets are recommended for atmospheric or other like exposure. Stainless and Heat Resisting Sheets and Light Plates have extraordinary strength and maintain their original good appearance without expensive care.

The "AMERICAN" brand on any sheet steel product gives assurance of the greatest competence in metallurgical and engineering knowledge and the most thorough control of materials and processes from first to last. "AMERICAN" for plain carbon sheets, "AMERICAN KEYSTONE" for copper-steel sheets, "AMERICAN USS STAINLESS" for chromium or chromium-nickel alloy sheets—these are the principal identifications.



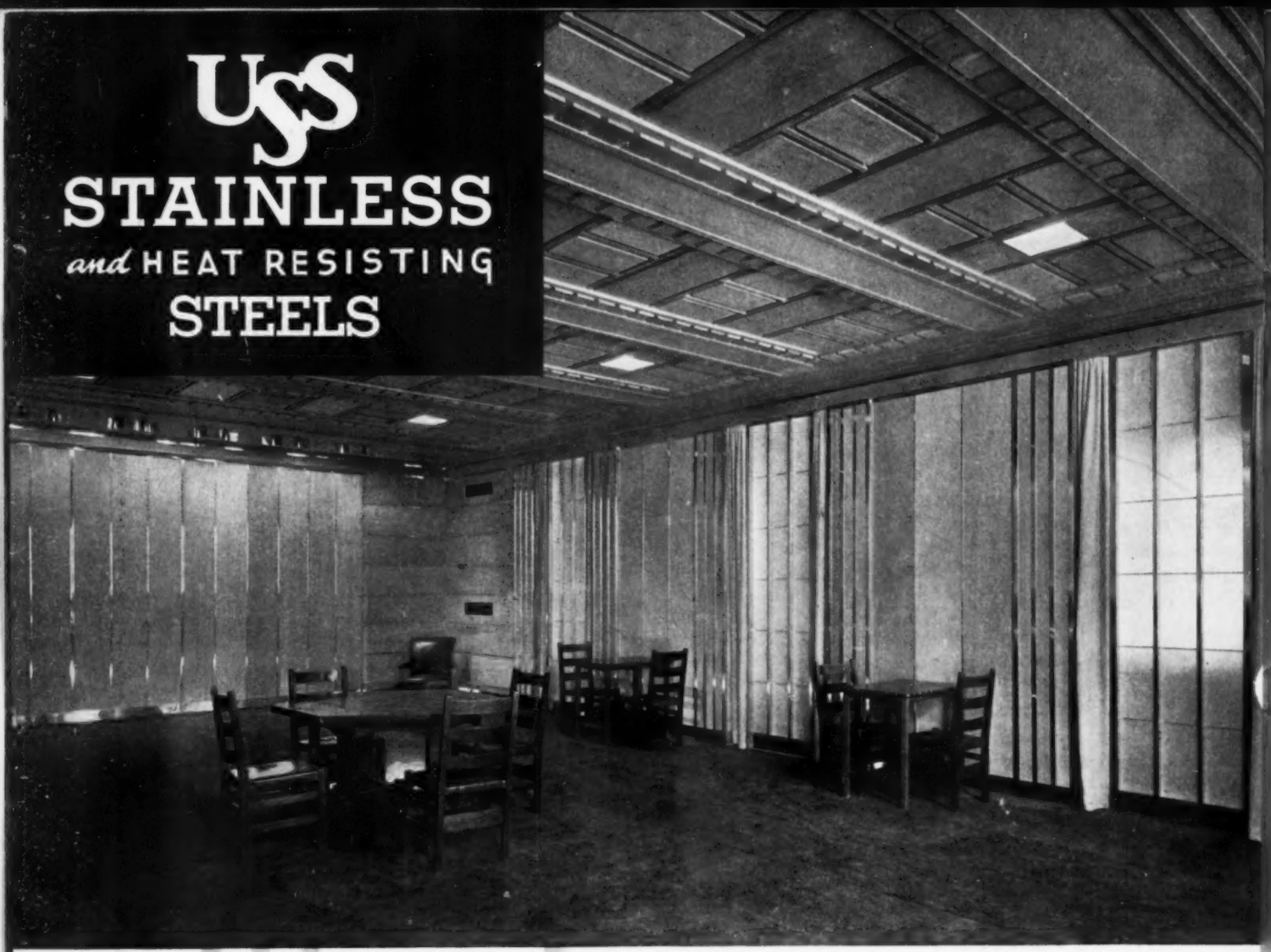
Without sheet steel, many of the advancements of modern construction and equipment with which we are familiar would be either more difficult and costly or actually impossible. Air conditioning is one such development, added to the already large uses for heating and ventilating. For many such installations, because of the variations of moisture that occur, copper steel sheets of AMERICAN manufacture (KEYSTONE brand) are well worth the small premium that they cost.

AMERICAN SHEET AND TIN PLATE COMPANY
PITTSBURGH

STEEL SHEETS FOR EVERY STRUCTURAL USE
BLACK, GALVANIZED, COPPER STEEL • FLAT AND CORRUGATED • FORMED ROOFING PRODUCTS

US STEEL

USS STAINLESS and HEAT RESISTING STEELS



Where objects are re-patterned for appearance, re-fashioned for strength, or in any way made over to suit the temper and the tempo of the new day, Stainless Steel enters more and more. A modern material for the modern age, it has been exhaustively tested . . . minutely differentiated . . . specifically adapted . . . and exactly reduced to formula in the USS Stainless series as now offered to industry. USS Stainless is made available by the companies named below, and by each in the forms indicated. These manufacturers will gladly aid in studying particular needs, in order that discriminating choice may lead to greatest satisfaction.

✶ **AMERICAN SHEET and TIN PLATE COMPANY • PITTSBURGH**
Sheets and Light Plates

✶ **AMERICAN STEEL & WIRE COMPANY • CHICAGO**
Cold Rolled Strip Steel • Wire and Wire Products

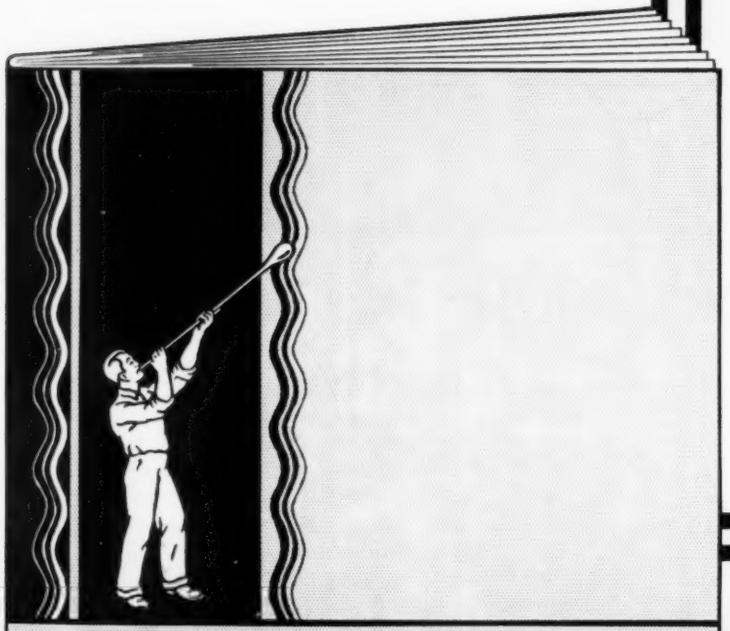
✶ **CARNEGIE STEEL COMPANY • PITTSBURGH**
Plates, Bars and Semi-Finished Products

✶ **ILLINOIS STEEL COMPANY • CHICAGO**
Bars, Plates, Special and Semi-Finished Products

✶ **NATIONAL TUBE COMPANY • PITTSBURGH**
Pipe and Tubular Products

United States Steel Corporation Subsidiaries

To BRING YOUR LIGHTING FILE *up to date*



MACBETH LIGHTING GLASSWARE

MACBETH-EVANS GLASS COMPANY, CHI

Please

ASK FOR YOUR COPY NOW

The new Macbeth catalog will soon go to press. More completely than ever before it will illustrate the entire line of Macbeth Illuminating Globes and Architectural Glassware. • Photometric charts and helpful specification data will be included. Your file will not be complete without this comprehensive textbook on scientific and attractive illumination. • Please use the coupon below or write us stating the number of copies you will need. By doing so you will assure yourself the very newest illuminating data at the earliest possible moment.

MACBETH-EVANS GLASS CO. • CHARLEROI, PENNA.

Gentlemen: Please mail me as promptly as possible.....copies of the new Macbeth Catalog of Illuminating Glassware.

Name.....

Firm.....

Address.....

AR .....

NOW . . A Decorative Material That Does More Than Decorate

YOUR search for a decorative material that will achieve effectively several important objectives in modern design and construction beyond decoration ends when you have discovered and used the new Insulite Tile and Plank. Available in many sizes and in two colors, each with three surfaces and three types of joint, these new products offer several added values that commend them to the discriminating builder and designer.

The Insulite Tile used in the new Goodhue County Court House at Red Wing, Minnesota, illustrated above, does more than decorate ceilings effectively, permanently, and with dignity. Its sound-absorbing efficiency assures quieter corridors. In other types of buildings—for walls and ceilings in churches, schools, theaters, auditoriums, hospitals, stores—Insulite Tile and Plank decorate, improve acoustics, insulate against the passage of heat and sound.

The new Insulite Tile and Plank products combine great versatility of interior decoration with other important advantages that make buildings of all kinds more attractive—more efficient. Moreover, they do the job at reasonable cost.

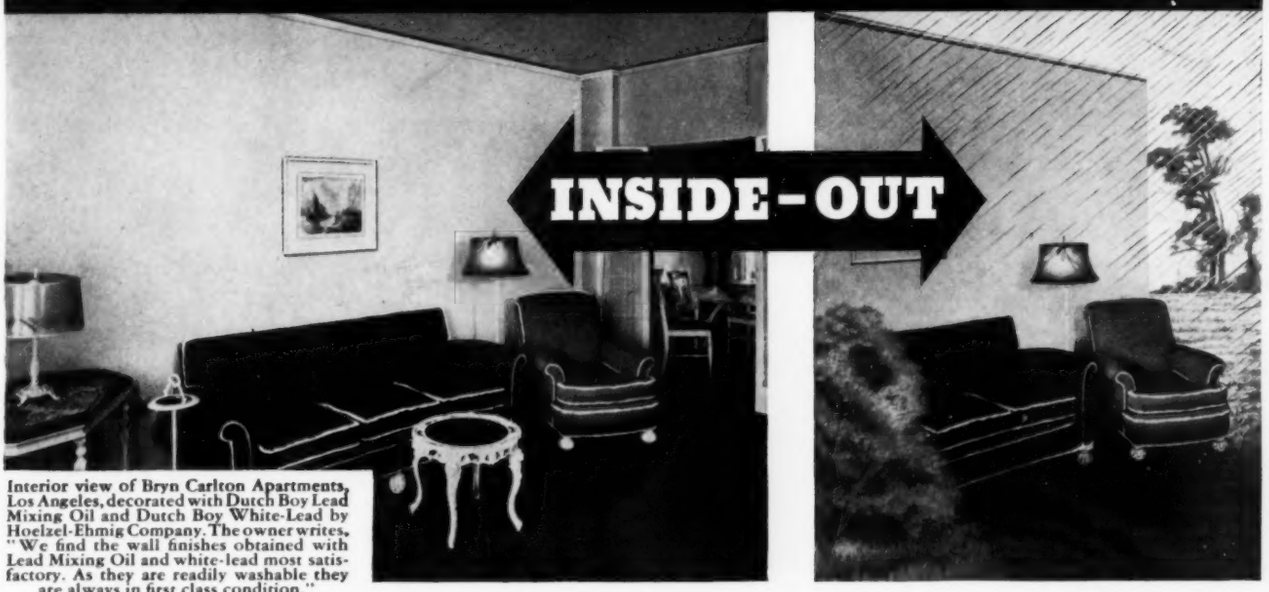
Insulite products are sold by lumber dealers everywhere. See our complete catalog in Sweet's —section 13, catalog 18. For specific information regarding these new Tile and Plank products, including suggestions on design, write our Engineering Service Department. The Insulite Company, Department AR-3, Builders Exchange Building, Minneapolis, Minnesota.

INSULITE

The Original Wood-Fiber Insulating Board

IN EVERY ADVERTISEMENT TO PROSPECTIVE BUILDERS OR MODERNIZERS WE SAY: "IT WILL PAY YOU TO SEE AN ARCHITECT WHE' 'LD OR REMODEL"

If you could turn this room . . .



Interior view of Bryn Carlton Apartments, Los Angeles, decorated with Dutch Boy Lead Mixing Oil and Dutch Boy White-Lead by Hoelzel-Ehmig Company. The owner writes, "We find the wall finishes obtained with Lead Mixing Oil and white-lead most satisfactory. As they are readily washable they are always in first class condition."

this BEAUTIFUL FLAT PAINT *would take Everything the weather offered!*

● Pardon the word "Paradox", but that's the only word for it. The only word that describes this surprising "dual-role" flat paint.

You've never seen a flat paint like it!

So rich in tone and finish it beautifies the handsomest interior . . . yet so durable it's widely used to protect exterior surfaces of stucco, concrete, brick and stone, surfaces which it thoroughly seals and waterproofs.

Where can you get it?

Right in your own paint shop or through your painting contractor. All your painter needs is Dutch Boy White-Lead and its special companion product . . . Dutch Boy Lead Mixing Oil.

When added to white-lead this special oil produces a finish with the characteristic beauty of a white lead "flat" plus extraordinary durability.

The fact that it defies the weather on outside jobs gives you a good idea how economical such a finish is on inside jobs—how it withstands repeated washing and wear.

STANDS THE HEEL TEST

You can actually grind your heel against a Lead Mixing Oil job that is thoroughly dry and then clean off the dirt without a trace of damage.

It's a finish, too, that's hard to soil permanently. Ink stains, pencil marks, finger smudges, grease and dirt can all be completely removed.

Other advantages: Easy to mix—just add Lead Mixing Oil to white-lead. Levels out smooth and even. Requires no stippling. Has excellent sealing qualities. Hides fire-cracks. Brushes with the ease and high spreading rate of all white-lead paint. Gives a white-lead "flat" at a reduced cost per gallon.

NATIONAL LEAD COMPANY

111 Broadway, New York; 116 Oak St., Buffalo; 900 W. 18th St., Chicago; 659 Freeman Ave., Cincinnati; 820 W. Superior Ave., Cleveland; 722 Chestnut St., St. Louis; 2240 24th St., San Francisco; National-Boston Lead Co., 800 Albany Street, Boston; National Lead & Oil Co. of Penna., 316 Fourth Avenue, Pittsburgh; John T. Lewis & Bros. Co., Widener Bldg., Philadelphia.

DUTCH BOY *Lead Mixing Oil*

..for use with

What is modern elevator practice for hospitals?

THROUGH our experience in designing and installing hospital elevator equipment, we have found that there are certain fundamental specifications common to all of these institutions. Installations must be rugged in construction to insure uninterrupted service, minimum cost of maintenance, ease of making replacements, and freedom from major repairs. And they must be smooth and quiet in operation. Other than these, the elevator problem varies with the needs of the institution and each installation should be designed for the building it is to serve. The following will be helpful in determining the type of equipment needed in a specific building.

SPEED varies from 100 feet per minute for the small, private institution to 800 feet and over for the large medical center. Rapid and smooth acceleration and retarding characteristics are of utmost importance, since hospital elevator service usually requires almost constant stopping and starting at the various floors.

CAPACITY varies from 2500 pounds to 4000 pounds. In general, 3000-pound capacity is ample for normal requirements. This corresponds to the requirements for elevators with platform size of 5 feet 6 inches by 8 feet as laid down by the American Standard Safety Code. This platform size is almost a necessity for the accommodation of wheel chairs, stretchers, or beds.

CONTROL—Type of control has changed considerably in recent years. Various types of automatic button control are available. In the smaller and medium sized hospitals, collective automatic control is used. And in the highest type of institution, automatic signal control gives best service. On the higher speed elevators, two-way self-leveling (Otis micro-leveling) is available—a very necessary thing in institutions where patients are transported from floor to floor.

The collective controls are arranged for service with an attendant when service demands require it—and so have that advantage as well as the merit of self-service by the passengers when traffic is such that no attendant is needed.

QUIETNESS of hospital elevators is assured by use of sound-proofing of machines and controllers, and by using rubber-tired hangers and especially designed door-operating equipment.

CARS designed to harmonize with architectural treatment of building are available. They include such special features as a sanitary coved base, ventilating fans, rubbing strips to prevent defacement of interior by wheeled vehicles, and other important refinements.

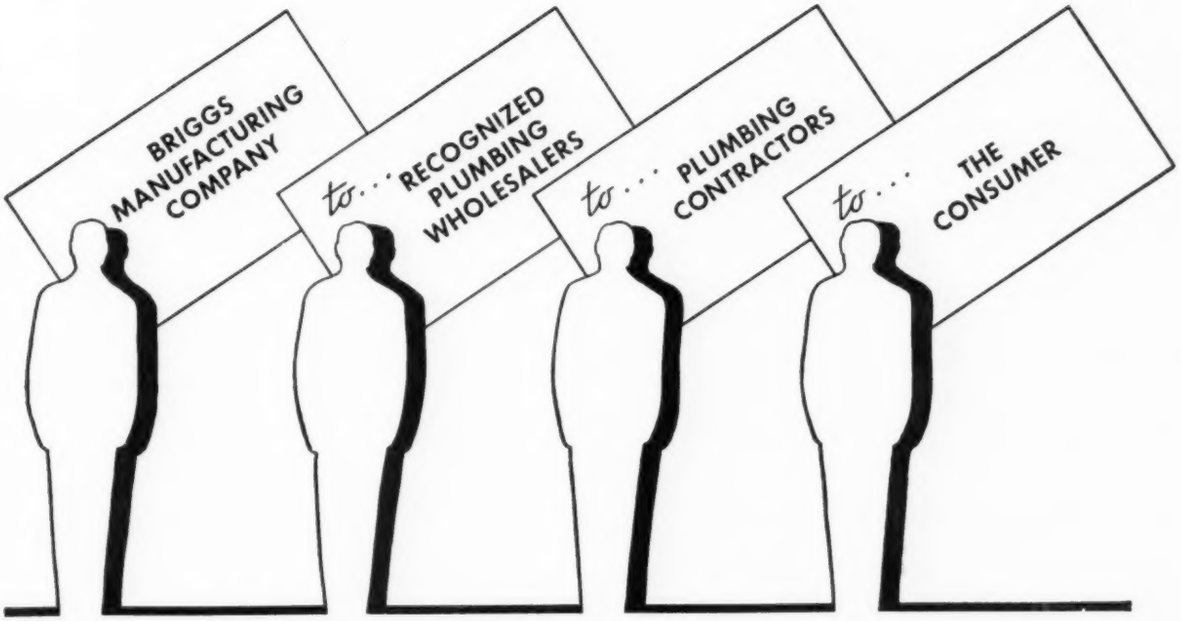
In the larger types of hospitals, there should be separate service elevators to carry food carts and laundry, and to meet other service requirements. Dumb-waiters of the automatic, push-button type are feasible for the smaller institutions.

In summing up the elevator requirements for hospitals, these points are important:

1. Dependability—to insure uninterrupted service.
2. Adaptability—the proper equipment for each institution.
3. Reliability—this can be determined beforehand by inspection of similar installations.
4. Tranquillity—freedom from undue noise.
5. Rapid but smooth service.
6. Ample-sized cars.
7. Automatic control system and self-leveling.
8. Proper maintenance by the manufacturer to insure freedom from shut-downs and needless repairs.

These items enumerated above give merely the general outline of transportation requirements for hospitals. For an expert analysis of a specific institution, either in existence or in the blue-print stage, consult the nearest Otis office. We shall be glad to submit recommendations covering your requirements. There is no obligation for this service.

OTIS ELEVATOR COMPANY



THIS IS OUR POLICY

The satisfactory installation of plumbing ware in a client's home is a major concern of the architect, in which his interests are inseparably allied with those of the recognized plumbing wholesalers and master plumbers who provide the many indispensable services upon which he relies. Realizing this, we are sure that the profession will whole-heartedly approve our decision to distribute the now completed line of newly designed, formed-metal Brigsteel Plumbing Ware exclusively through recognized trade channels. More than two years of intensive research confirms our conviction that the interests of the architect and the consumer, as well as those of the master plumber, are thus served to the best advantage. We invite your inspection of the Brigsteel line, which has been conceived through the application of new manufacturing methods and sound metallurgical developments of the past decade and designed from the functional viewpoint, free from outworn prejudices yet with wholesome respect for accepted principles.

BRIGSTEEL BEAUTYWARE

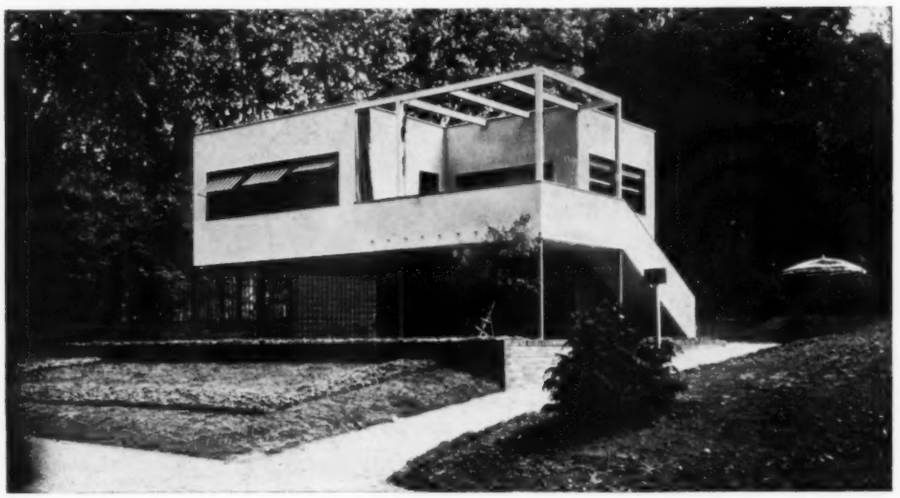
Pre-showing of Brigsteel Beautyware at Chicago Exposition of Plumbing, Heating and Allied Products, Stevens Hotel, June 24-27.

Plumbing Ware Division • **BRIGGS MANUFACTURING COMPANY** • ***Detroit***

AN IMPORTANT AND TIMELY CONTRIBUTION TO THE LITERATURE OF PRESENT DAY ARCHITECTURE—A BOOK THAT WILL BE INVALUABLE TO EVERY ARCHITECT, DESIGNER AND STUDENT OF PROGRESS IN RESIDENTIAL BUILDING

THE MODERN HOUSE

By F. R. S. YORKE
A.R.I.B.A.



The Architectural Record is pleased to be able to offer this illuminating and informative book, recently published in England and reflecting the latest and most successful practice in the design and construction of Modern Dwellings not only in the United States and England but in France, Germany, Holland, Belgium and other European Countries.

The point of view of the author, an associate of the Royal Institute of British Architects, is expressed in this paragraph:

> "We can no longer afford to build the house that makes bad use of space, or to employ ornamental devices to counteract weaknesses in basic design. Anything that is for use must be, above all else, efficient, and the design of the modern house is based on the principle of utility—it is fundamentally a thing for use; its design, as such, naturally becomes more complex as the standard of living improves, if freedom is to be retained. It is essentially progressive, and the twentieth-century habitation presents a problem that can only be solved in the light of the needs and resources of the present age."

Mr. Yorke has painstakingly collected the most successful examples of advanced house design from the leaders in the movement. His book gives a clear, comprehensive and extremely useful picture of the problems of Modern House Design and of their solutions. It is filled with practical information on plan, design, methods of construction, materials and equipment. It is a handsome volume of 200 pages, 7½ by 10, illustrated with approximately 500 photographs, plans and constructional details. It outlines the requirements to be met in the new type of home and discusses all its component parts—plan, wall, window and roof. One chapter deals with Experimental and Prefabricated Houses. An entire section of over one hundred pages is devoted to the presentation of typical houses erected from 1924 to 1934.

Believing that "The Modern House" is certain to take its place as a standard text in this country as well as abroad, The Architectural Record has arranged to handle its distribution in America. The price, including postage within the United States, is $6 per copy.

THE ARCHITECTURAL RECORD
119 West 40th St., New York City

Enclosed is $6 for which send me a copy of THE MODERN HOUSE, by F. R. S. YORKE, A.R.I.B.A.

Name.....

Address .....

City and State..... A.R.6-35

WHEN AIR CONDITIONING MADE MATCH MAKING POSSIBLE IN HOT WEATHER

In the sweltering heat of midsummer 1916, many a citizen of Wadsworth, Ohio, cocked his eye towards the match plant and exclaimed—"Well, I'll be hanged, the match plant is still working! Something strange. Never heard of it in hot weather."

Some old-timers had "their doubts." Others said, "It wouldn't last."

The fact remains, American Blower Individually Engineered Air Conditioning installed in the Ohio Match Company's plant 19 years ago made it possible, for the first time in the company's history, to produce matches during hot weather.

Since 1916, the Ohio Match Company has produced many billion boxes of matches regardless of weather. Numerous additions equipped with American Blower Air Conditioning have been added to the plant. The original Air Conditioning pioneered by American Blower, long before most people knew that such a thing existed, is still giving satisfactory service.

To countless other industries and processes of all types and descriptions, American Blower has applied Individually Engineered Air Conditioning.

If you are an architect or consulting engineer and have an air conditioning problem or one that requires equipment for mechanical draft, heating, ventilating, cooling, or just air handling, American Blower Engineers will gladly cooperate with you in the design and manufacture of equipment to meet your specific needs and conditions.

American Blower's more than fifty years of close cooperation with architects and consulting engineers assures the proper knowledge, products and data to enable you to do a better job—a more satisfactory and a more economical job—for yourself and your client.

AMERICAN BLOWER CORPORATION
6000 RUSSELL STREET • DETROIT, MICHIGAN
BRANCH OFFICES IN ALL PRINCIPAL CITIES
Division of American Radiator & Standard Sanitary Corporation

INDIVIDUALLY ENGINEERED AIR CONDITIONING

Laid Out and Specified by Leading Architects and Consulting Engineers . . . Designed and Manufactured by American Blower . . . Installed by Responsible Contractors Everywhere.

(1322)

American Blower

"Sirocco" VENTILATING, HEATING, AIR CONDITIONING, DRYING, MECHANICAL DRAFT
DIVISION OF AMERICAN RADIATOR and STANDARD SANITARY CORP.

F 66
BEAUTY IN WALLS OF ARCHITECTURAL CONCRETE

Outstanding examples of the use of concrete are pictured in the booklet of the above title published by Portland Cement Association. Typical buildings illustrated include hotels, churches, jails, schools, apartment and industrial buildings. Copies of the booklet furnished to interested architects.

F 67
FREON UNITS AND AIR CONDITIONERS INTRODUCED BY YORK

York Ice Machinery Corporation has just introduced 15, 20 and 30 ton horizontal type air conditioners and has added four new Freon self-contained condensing units ranging in size up to 25 horsepower. Designed especially for use with Freon refrigerant, the new condensing units embody all the features of York's Balanseal lines of machines—Pressureflex suction and discharge valves, Centriforce oiler, air-cooled cylinders, and electric furnace nickel iron cylinders, crankcase, and pistons. An outstanding new feature is the shell and spiral finned tube condenser which, York engineers state, has greater capacity and improved efficiency over previous condenser designs. Another new feature is the "vortex eliminator" in the liquid refrigerant outlet from the condenser. This device prevents the formation of a vortex, or whirlpool of liquid, at the refrigerant outlet within the receiver, and eliminates the possibility of gas passing to the expansion valve.

York's new air conditioners are built for applications such as the larger retail stores, restaurants, and a wide range of other comfort and industrial uses of air conditioning. One of their most important applications is for air conditioning single floors of office buildings and department stores. They can be arranged for year 'round air conditioning—cooling and dehumidifying in summer, heating and humidifying in winter, and circulation, filtering, and introduction of fresh air during all seasons; or they can be furnished for summer operation only.

F 68
ELECTRICAL THERMOMETERS FOR AIR CONDITIONING

"Efficient Regulation of an Air Conditioning System" is the title of a 24-page booklet explaining the applications of electrical thermometers to air conditioning mechanism. It is published by Leeds & Northrup Company, Philadelphia, Pa., and is available to any one requesting a copy.

F 69
CORK TILE

An illustrated booklet by United Cork Companies, Lyndhurst, N. J., contains complete information about cork tile, said to be a non-conductor of heat or cold, quiet, sanitary, resilient, non-absorbent and susceptible to pleasing decorative patterns.

F 520
NEW GENERAL ELECTRIC SERVICE

In line with the increased interest in home construction and modernization, and in order to render a service to architects and home builders which will insure proper installation and arrangement of electrical servants leading to maximum convenience and satisfaction for home owners, a Service for Architects, Consulting Engineers, and Home Builders has been organized as a part of the General Electric Institute at Nela Park, Cleveland, under the supervision of C. M. Snyder.

TRADE ANNOUNCEMENTS

BELL & GOSSETT

The stock, manufacturing equipment, patent rights and good will of the D & T Manufacturing Co., St. Louis, have been purchased by the Bell & Gossett Company, Chicago, makers of B & G Indirect Heaters, Triple Duty Systems and other hot water heating equipment. Among the hot water specialties included in this sale are the "Simplex Airsealed Tank in Basement" System, D & T Water Relief Valve, Self-Filling Air Cushioned Tank Equipment, All-in-One Hot Water Heating Regulator and other well-known devices. Also included is the D & T Vacuum Boiler Return Trap for vacuumizing one and two-pipe and air line steam systems.

BROWN INSTRUMENT COMPANY

The Brown Instrument Company, Philadelphia, Pa., manufacturers of instruments and controls, and the Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., manufacturers of control systems and regulators, have opened a joint office in Atlanta, Georgia, to serve the Southeast.

REPUBLIC STEEL CORPORATION

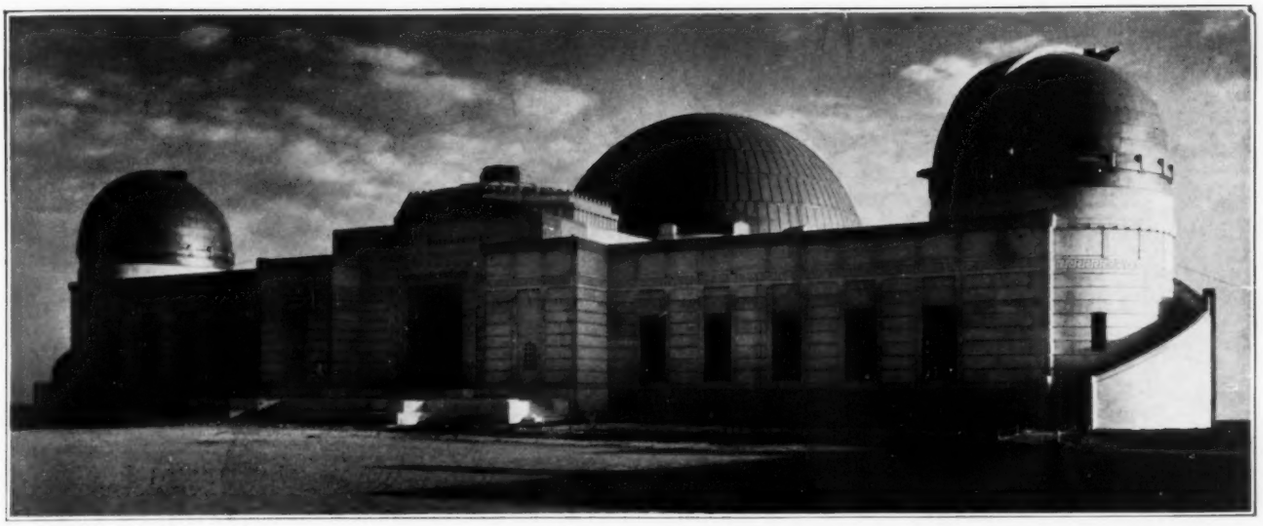
Lee Wright has been appointed sales representative for Republc Steel Corporation, with headquarters at 401 Atlas Bldg., Salt Lake City, Utah, according to an announcement by N. J. Clarke, Vice President in Charge of Sales for Republic.

WESTINGHOUSE

J. K. B. Hare, sales executive of the Westinghouse Electric and Manufacturing Company has been appointed manager of the Buffalo Office of the Company. He takes the office made vacant by the promotion of H. F. Boe, to the position of assistant manager of the Eastern District, with headquarters in New York.

TRENTON POTTERIES CO.

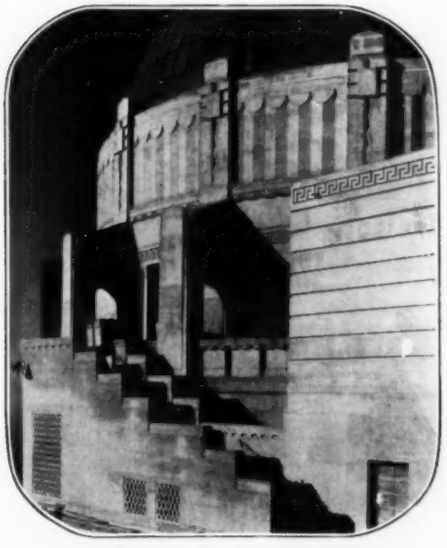
At a recent meeting of the Board of Directors of The Trenton Potteries Co., George E. Hoffman was elected Vice President in charge of sales.



Griffith Observatory and Hall of Science, Hollywood Mountain, Los Angeles, California. Built for the ages of monolithic concrete. Austin & Ashley, Architects, William Simpson Construction Co., Builders, Los Angeles.

Generations Yet Unborn will admire and enjoy this monument of MONOLITHIC CONCRETE

"FOREVER AND EVER" men may search the eternal stars from the Griffith Observatory and Hall of Science. All that men have learned about building since they labored on the pyramids, was available to those who planned it. They demanded a structure that would rest in distinctive beauty on the everlasting slopes of Hollywood Mountain, defying time and fire and storm and decay and even earthquakes. Monolithic concrete was chosen as the ideal means of attaining all these objectives.



Detail of Griffith Observatory. Domes over the Planetarium and the Foucault Pendulum are of concrete and copper.

Exceptional care was exercised in the selection and grading of aggregates. The proper cement-and-water ratio was rigidly adhered to. All concrete was adequately manipulated. Rustication, vertical ornaments and other architectural features made it possible to deposit concrete in masses of reasonable size. Scientific design was matched by conscientious supervision of construction.

The architectural and form details of Griffith Observatory are described in one of a series of monographs. A second monograph gives typical specifications covering all phases of monolithic concrete building construction. Others will contain standard details of windows, doorways, parapets; every part of a building will be included.

Write for your copies today. The coupon is for your convenience.

.....

PORTLAND CEMENT ASSOCIATION
Room 286, 33 West Grand Avenue
Chicago, Illinois

Please place my name on your mailing list and send me free copies of Concrete Information, Architectural Concrete Series.

Name.....*Address*.....

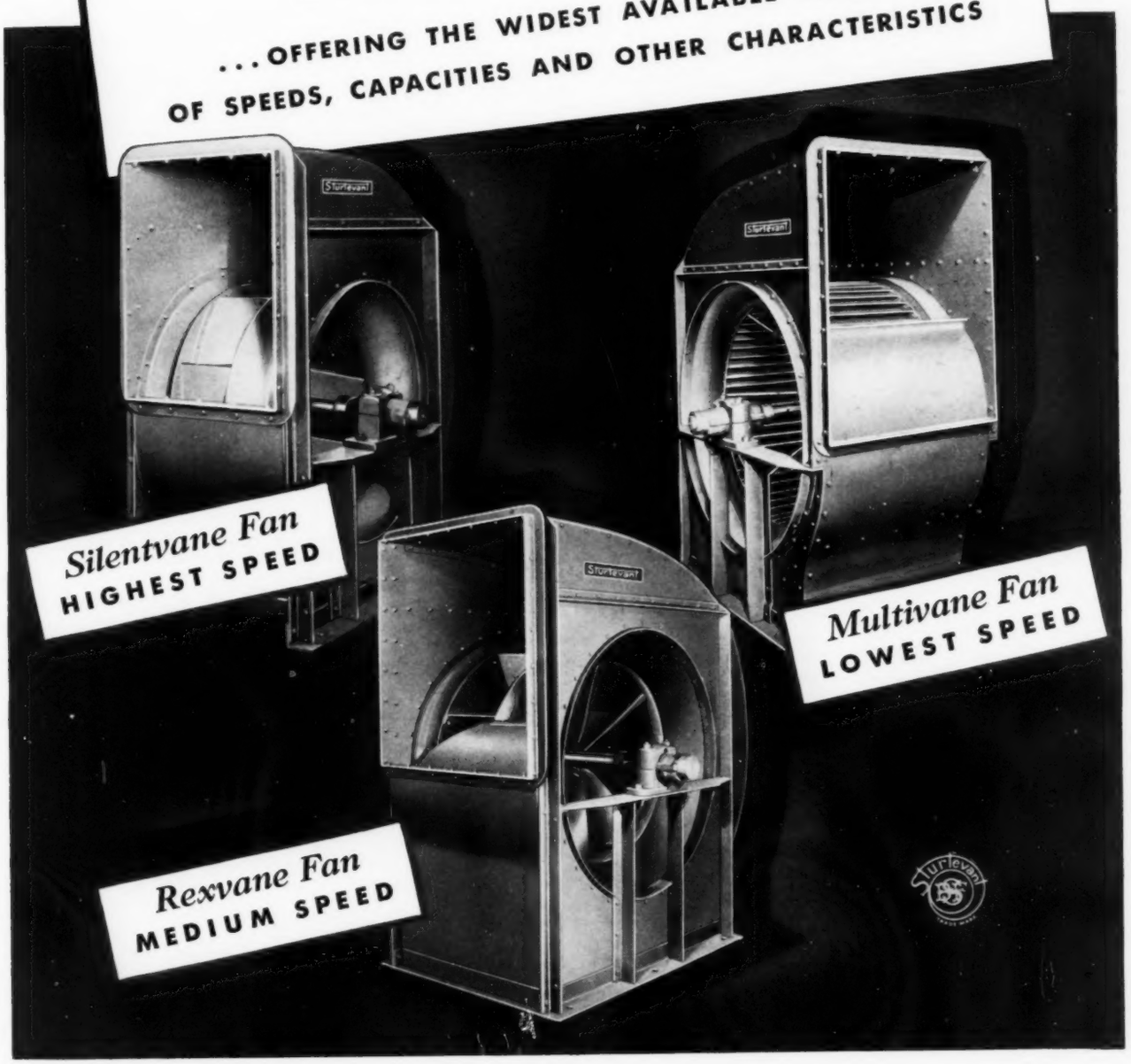
City.....*State*.....*Position*.....

Announcing

3 new Sturtevant fans!

REG. U.S. PAT. OFF.

...OFFERING THE WIDEST AVAILABLE VARIETY OF SPEEDS, CAPACITIES AND OTHER CHARACTERISTICS



THREE New Sturtevant Ventilating Fans... incorporating up-to-the minute improvements in design and construction... and offering architects, engineers and contractors the most comprehensive available variety of speeds, capacities, and other characteristics.

Silentvane: High speed. Backwardly curved blades. Limiting Horsepower Characteristic. (Catalog 381-1).

Rexvane: Medium speed. The modern, improved paddle wheel, with greatly increased capacity. (Catalog 414).

Multivane: Low speed. Forwardly curved blades. Admirably adapted to ventilation requirements. (Catalog 271-1).

B. F. STURTEVANT COMPANY

Hyde Park, Boston, Mass.

New York, N.Y., 420 Lexington Ave. Chicago, Ill., 400 N. Michigan Ave.

San Francisco, Cal., 681 Market St. *Branch Offices in Other Cities*

TOOKER & MARSH
ARCHITECTS
101 PARK AVENUE
NEW YORK

E. POST TOOKER
REGINALD E. MARSH
MAURICE A. GRISEZ

ASHLAND 4-5634

March 15, 1935.

F. W. Dodge Corporation,
119 West 40th St.,
New York, New York.

Dear Sirs:

In reply to your inquiry made by Mr. Eastman with reference to the services of your Plan Room, I feel that this Plan Room is of very great help to architects for the following reasons:

First - it eliminates by a large number the subcontractors taking off quantities in the architects' offices.

Second- a subcontractor coming in to figure one set of plans will become interested and figure the other plans on file.

Yours very truly,
TOOKER & MARSH

EPT/K

Like Mr. Tooker, you, too, will find Dodge Plan Rooms a great help. Beside the four shown (reading from top down), New Orleans, Detroit, Houston and Atlanta, our offices in Birmingham, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Greensboro, Indianapolis, Kansas City, Miami, Milwaukee, New York, Philadelphia, Pittsburgh and St. Louis include Plan Rooms. Explain the advantages of Dodge Plan Room Service to your clients. They will approve one or more sets of blueprints for this purpose. Ask your Dodge reporter about this service.

OUR CATALOG IS FILED IN SWEET'S

Dodge Report Service

Always wanted to . . . Never expected to

NOW THEY'RE GOING TO!

THOUSANDS of families, with money unexpectedly available for building homes of their own, are drafting rough plans on scratch paper, trying to figure costs for themselves, and getting a lot of understandable pleasure from their new adventure.

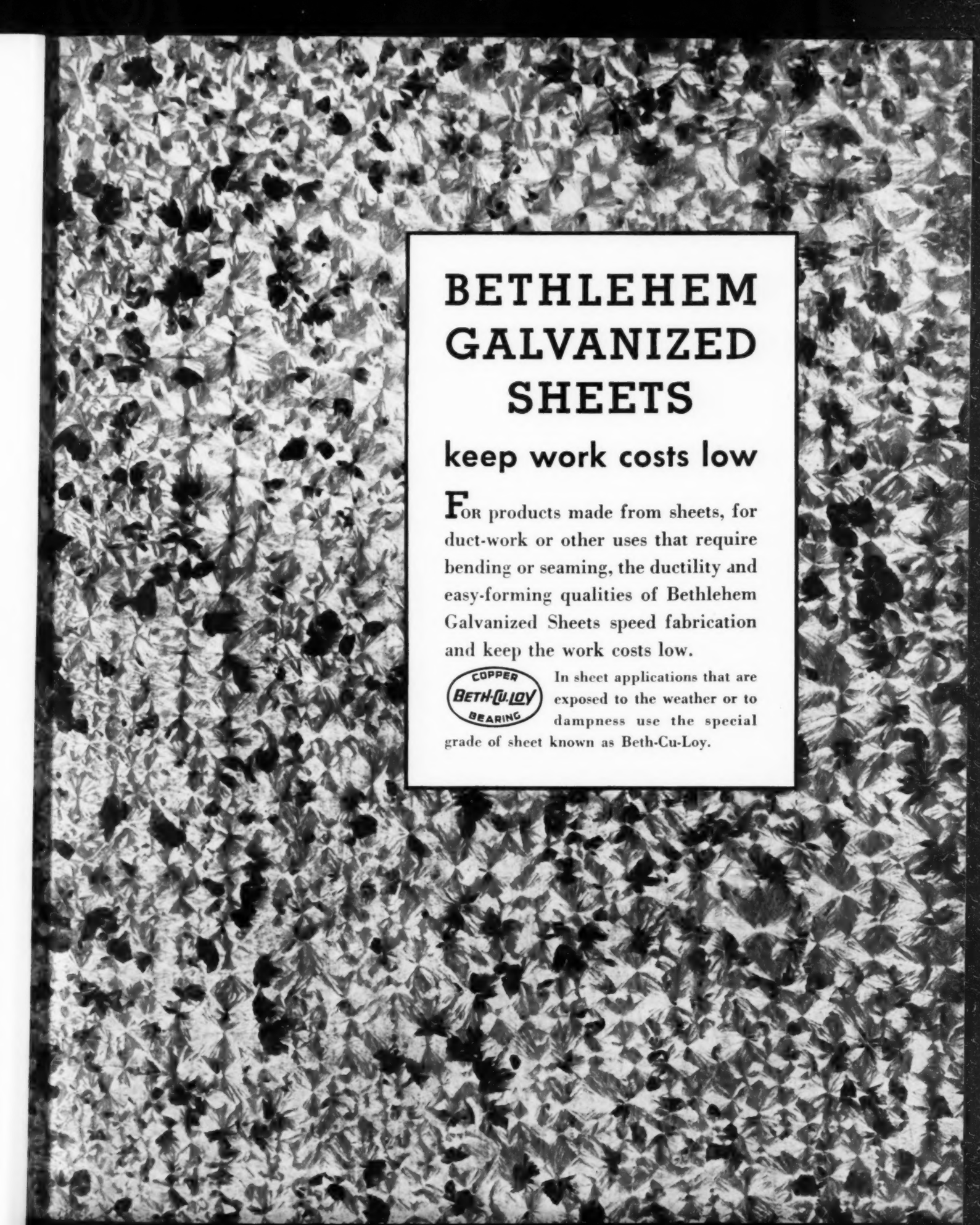
To these families from the Stanley Works comes a booklet which makes the home builder stop and think. "You'll be paying for your home for the next twenty years. Will it be livable when the last payment is made?" These are questions the booklet asks. Forcefully, logically and persuasively the booklet urges the new home builder to seek professional advice. Points out that the architect's advice on design, hardware and materials can make the new home attractive long after the last payment is made.

Stanley would like to have you see this booklet and will be glad to send you free copies. We shall also be very glad to send copies to any prospective home builders in your locality. Will you send us their names and addresses?

The Stanley Works
New Britain, Conn.

STANLEY SW

A CONSTRUCTIVE PROGRAM FOR THE BENEFIT OF EVERY FACTOR IN THE BUILDING INDUSTRY



BETHLEHEM GALVANIZED SHEETS

keep work costs low

For products made from sheets, for duct-work or other uses that require bending or seaming, the ductility and easy-forming qualities of Bethlehem Galvanized Sheets speed fabrication and keep the work costs low.

COPPER BEARING BETH-CU-LOY

In sheet applications that are exposed to the weather or to dampness use the special grade of sheet known as Beth-Cu-Loy.

BETHLEHEM STEEL

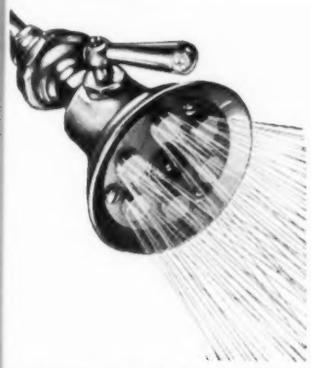
BETHLEHEM STEEL COMPANY

GENERAL OFFICES: BETHLEHEM, PA.

WE HAVE ALWAYS BEEN SPECIALISTS IN

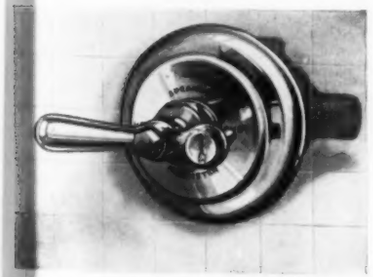
★ QUALITY BRASS ★

★ *SINCE 1869* ★



K-3395—SPEAKMAN Anystream Self-Cleaning Shower Head (Pat. Jan. 2, 1923, and Nov. 3, 1931).

K-2634-M—SPEAKMAN Built-in Metaline Heavywate Shower.



K-3365—SPEAKMAN Built-in Mixometer.

OURS being a strictly brass line we can concentrate all our efforts on a single purpose — the development of better and more efficient showers and fixtures.

No detail of any of our fixtures is too small to be overlooked—for instance, the washer retaining screw in all Speakman valves is now made of Monel Metal which resists the action of corrosive waters. This is very important especially when the valve has to be rewashered. Ordinary brass machine screws frequently break off at the slot or stem when being rewashered. This frequently involves the cost of tapping out or replacing the stem.

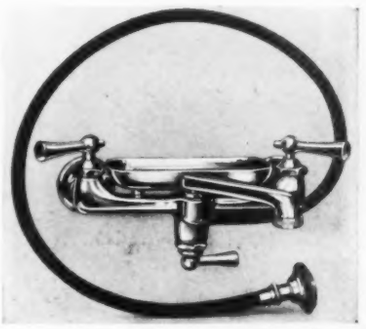
It is by this constant attention to a single line — *brass* that we have gained the reputation for making the finest line of showers and fixtures in the world — *the kind that you can install and forget.*

SPEAKMAN COMPANY

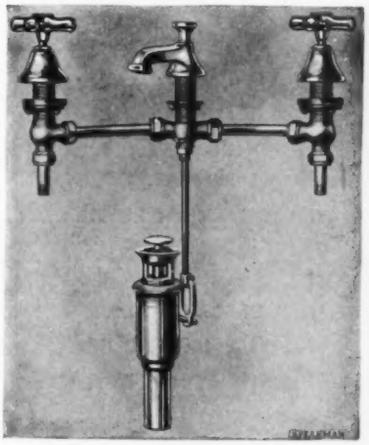
Wilmington, Delaware

Refer to Sweet's Architectural Catalogs
Section 25, Catalog 9

K-4656—SPEAKMAN Act-Easy Pop-up Bath Waste.



K-5504-M — SPEAKMAN Grace-Line Sink Fixture, with Hose and Spray Head.



K-5010—SPEAKMAN Unit-Acto Lavatory Fixture.

SPEAKMAN *Showers & Fixtures*

INDEX TO ADVERTISEMENTS

ITALIC LINE UNDER MANUFACTURERS' NAME GIVE THE SECTION NUMBERS OF THEIR CATALOGS IN SWEET'S CATALOG FILE (Architectural) 1935

TO HELP HER RECOGNIZE
"THE HOME OF HER DREAMS"

FLOORS . . . often the first thing noticed . . . become a definite symbol of quality throughout the building, when they are Northern Hard Maple. To experienced property owners, Maple means "built to endure"; and its use suggests similar care and thoroughness in selecting all other building materials.

Northern Hard Maple is the one flooring which combines warm, dry cushioning effect beneath the feet with lasting wear and smoothness. It is resilient, tough-fibred, tight-grained . . . will not sliver, splinter or develop ridges even after years of strenuous service. Northern Hard Maple actually outwears stone—holds its smoothness as the years go by.

Whether you are building or remodeling—a careful comparison check-up on every important point in which you or your prospect is interested, will show you decided advantages in using Northern Hard Maple for your floors.

Whether you floor with blocks or strips, with or without pattern, over screeds, wood or concrete sub-floors—Maple will provide a floor that endures and satisfies. Time has proved Maple in thousands of houses, apartments, stores, schools and other types of buildings. Its use is inevitably a key to buildings built to *stay* young.

Write for grading rules and complete standard specifications for laying and finishing MFMA Maple, Beech, and Birch Floors.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1782 McCormick Bldg., Chicago, Illinois

See our advertisement Sec., 15/50 in Sweet's. Let our service and research department assist you with your flooring problems. Write us.

Floor *with* Maple

The letters **MFMA** on Maple, Beech or Birch Flooring signify that the flooring is standardized and guaranteed by the Maple Flooring Manufacturers Association, whose members must attain and maintain the highest standards of manufacture and adhere to manufacturing and grading rules which economically conserve these remarkable woods.
This trade-mark is for your protection. Look for it on the flooring you use. . . . . **MFMA**

Good Service Finishes Available

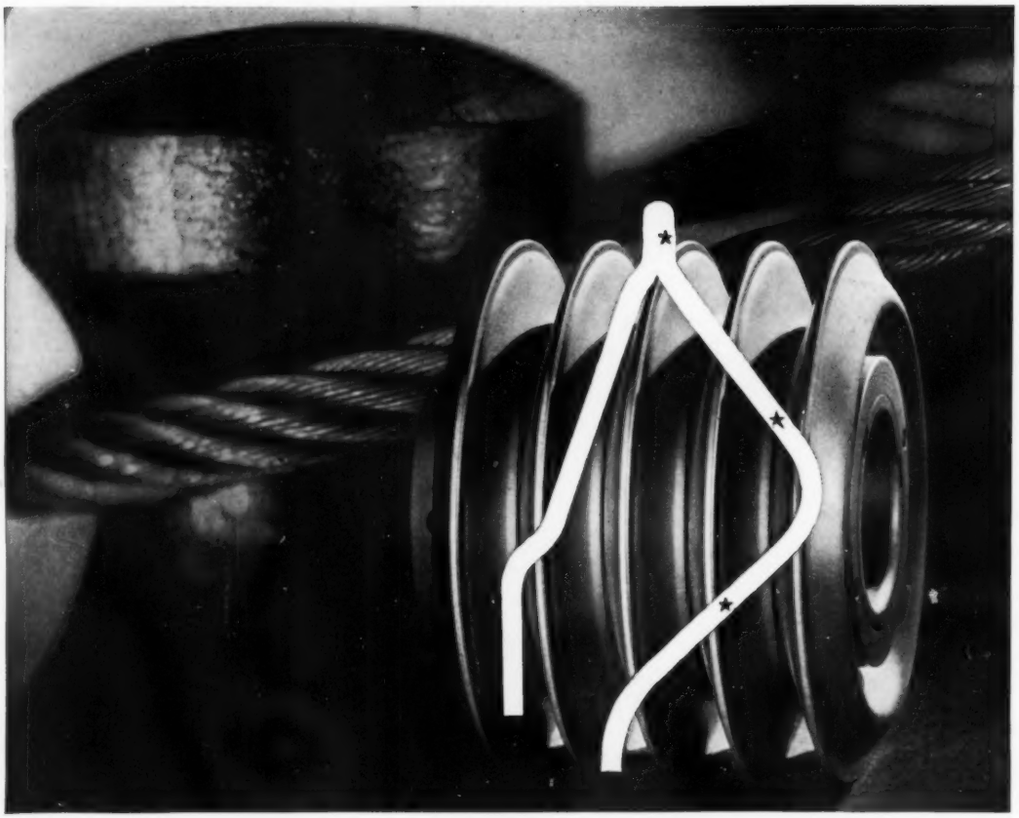
Natural or color. Seal the surface. Keep out dirt. Resist soil stains. Eliminate costly scrubbing. Non-slippery. Will not mar, scratch or flake off. Can be renewed without removing old finish.

YOUR LOCAL LUMBER DEALER WILL SUPPLY YOU

with Trade - Marked **MFMA** Maple, Beech or Birch Flooring—products of the following manufacturers licensed to use the Association trade-mark:

MFMA

Beck, August C. Company	Milwaukee, Wis.
Brown Dimension Company	Manistique, Mich.
Bruce, E. L. Company (Mill at Reed City, Mich.)	Memphis, Tenn.
Cobbs & Mitchell, Inc.	Cadillac, Mich.
Connor Lumber & Land Company (Sales Office, Marshfield, Wis.)	Laona, Wis.
Cummer-Diggins Company	Cadillac, Mich.
Farrin Lumber Co., M. B.	Cincinnati, Ohio
Holt Hardwood Company	Oconto, Wis.
Kerry & Hanson Flooring Co.,	Grayling, Mich.
Mitchell Brothers Company	Cadillac, Mich.
Northwestern Cooperage & Lumber Co.	Gladstone, Mich.
Oval Wood Dish Corp.	Tupper Lake, N. Y.
Robbins Flooring Company	Rhinelander, Wis.
Sawyer Goodman Company	Marinette, Wis.
Stephenson Company, I.	Wells, Mich.
West Virginia Pulp & Paper Co.	Cass, W. Va.
Wells, J. W. Lumber Co.	Menominee, Mich.
Wisconsin Land & Lbr. Co.	Hermansville, Mich.
Yawkey-Bissell Lumber Co.	White Lake, Wis.



STRENGTH

A mere two and one half inches of steel wire, in the form of a hawser, can handle 330,000 pounds of ship . . . if properly constructed and properly spliced. • A mere seven pounds of high grade pressed steel, in the form of a rotating sheave, can transmit 330,000 foot pounds of power per minute . . . if properly designed and properly fabricated. • The newly designed Duro-Brace Texsteel Sheaves, for Texrope V-Belt Drives, can do this and do it day in and day out under the severest conditions, for, in the new Duro-Brace design, the outside walls are reinforced by convex steel plates, which so greatly increase their strength as to eliminate distortion, thus giving a true-running, vibrationless drive always. • Texrope Drives are 98.9% efficient, silent, slipless, shock-absorbing, require no belt dressing or lubrication, and are not affected by dirt or moisture. • Mail us a card asking for Bulletin No. 2188 which sets forth the advantages which Duro-Brace Texsteel Drives offer you in all matters of power transmission, whether they be simple or complex.

★ ★ ★

Former Design: cross-section showing unsupported outside plate.

New Duro-Brace Design: cross-section showing outside plate braced by a convex reinforcing steel plate.

TEXROPE DRIVES

ORIGINATED BY

ALLIS-CHALMERS MANUFACTURING COMPANY • MILWAUKEE, WISCONSIN

ALLIS-CHALMERS

REVERE THRU-WALL FLASHING*

Revere, America's oldest name in copper and brass, announces a patented thru-wall flashing that is new in design, efficient in operation, and reasonably priced.

Material: The flashing is made of Revere Copper (soft temper) or non-staining Revere Leadtex (lead-coated sheet copper).

Design: Parallel ribs are rolled at 3-inch intervals along the full width of the flashing with embossings between each rib. The parallel ribs permit a water-tight interlocking joint with two-inch overlap to form continuous flashing without the use of solder, and the ribs also allow water to drain off quickly. The ribs and embossings make an unusually tight bond between mortar and flashing, prevent all lateral movement of the wall, and allow for expansion and contraction.

Adaptability: With most patented flashings, it is necessary to select several types to meet the ordinary flashing requirements. One of the principal advantages of Revere Thru-Wall Flashing is its adaptability. It is furnished in one type only . . . sheet form. All styles and sizes can be cut, bent, and formed from this sheet by the sheet metal contractor in his own shop with his every-day tools. Also, the flashing will not lose its original softness. Standard widths run from 8 to 36 inches. The length is 74 inches, which when laid up with two-inch overlap measures 72 inches.

Cost: Because of ideal manufacturing facilities and simplicity of design, the Revere Flashing is very reasonably priced. It is available through Revere Distributors in all sections of the country.

Note: Cheney Flashing is also available at Revere Distributors, and is reduced in price. These two flashings provide the proper protection for any and all types of construction . . . and the architect is assured of products that provide maximum safety and long-lasting durability.

For complete details and specifications on these flashings address our Executive Offices. **Patent No. 1,928,589*

Revere Copper *and* Brass

INCORPORATED

Founded by Paul Revere 1801

EXECUTIVE OFFICES, 230 PARK AVENUE, NEW YORK CITY · MILLS: BALTIMORE, MD. · TAUNTON, MASS. NEW BEDFORD, MASS. · ROME, N. Y. · DETROIT, MICH. · CHICAGO, ILL. · SALES OFFICES IN PRINCIPAL CITIES

LIKE THE WINNING DOG TEAM, THE SIX FACTORS OF AIR CONDITIONING SUCCEED ONLY UNDER CONTROL . . . AUTOMATIC CONTROL

Like a team of Huskies

AIR CONDITIONING DEMANDS *Control*

AUTOMATIC CONTROL cracks the whip over the six, otherwise unruly, factors* of year-round Air Conditioning. Without this control and coordination, they fail to provide properl yheated, properly humidified inside atmospheres in winter, and cool, livable, dry atmospheres in summer. Under Automatic Control, they become effective Air Conditioning.

Minneapolis-Honeywell, pioneer and leader for fifty years in the development of Automatic Controls, manufactures the Modutrol System, which will automatically control any Air Conditioning installation, large or small. The great versatility of this system makes it readily applicable to any standard or specialized installation. Under Modutrol guidance, that installation will operate at its maximum efficiency.

Minneapolis-Honeywell has available a brief informative book on the vital subject of Air Conditioning and its Automatic Control. It is a clear explanation of a subject whose uses and terms are often misunderstood. Your request on your letterhead addressed to Minneapolis-Honeywell Regulator Company, 2804 Fourth Avenue South, Minneapolis, Minnesota, will bring you your copy.

MINNEAPOLIS HONEYWELL

Control Systems

BROWN INSTRUMENTS FOR INDICATING AND RECORDING

The MODUTROL SYSTEM

Automatic Control of

* HEATING HUMIDIFYING CIRCULATIN
CLEANING COOLING DEHUMIDIFYIN